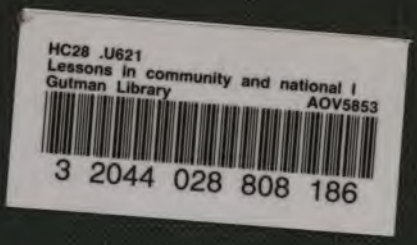
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DEPARTMENT OF THE INTERIOR
BUREAU OF EDUCATION
IN COOPERATION WITH THE UNITED STATES FOOD ADMINISTRATION

Lessons in Community and National Life

SERIES B

FOR THE FIRST CLASS OF THE HIGH SCHOOL AND THE UPPER GRADES OF THE ELEMENTARY SCHOOL

PREPARED UNDER THE DIRECTION OF

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THE WHITE HOUSE,
WASHINGTON,
August 23, 1917.

TO SCHOOL OFFICERS:

The war is bringing to the minds of our people a new appreciation of the problems of national life and a deeper understanding of the meaning and aims of democracy. Matters which heretofore have seemed commonplace and trivial are seen in a truer light. The urgent demand for the production and proper distribution of food and other national resources has made us aware of the close dependence of individual on individual and nation on nation. The effort to keep up social and industrial organizations in spite of the withdrawal of men for the Army has revealed the extent to which modern life has become complex and specialized.

These and other lessons of the war must be learned quickly if we are intelligently and successfully to defend our institutions. When the war is over we must apply the wisdom which we have acquired in purging and ennobling the life of the world.

In these vital tasks of acquiring a broader view of human possibilities the common school must have a large part. I urge that teachers and other school officers increase materially the time and attention devoted to instruction bearing directly on the problems of community and national life.

Such a plea is in no way foreign to the spirit of American public education or of existing practices. Nor is it a plea for a temporary enlargement of the school program appropriate merely to the period of the war. It is a plea for a realization in public education of the new emphasis which the war has given to the ideals of democracy and to the broader conceptions of national life.

In order that there may be definite material at hand with which the schools may at once expand their teaching, I have asked Mr. Hoover and Commissioner Claxton to organize the proper agencies for the preparation and distribution of suitable lessons for the elementary grades and for the high-school classes. Lessons thus suggested will serve the double purpose of illustrating in a concrete way what can be undertaken in the schools and of stimulating teachers in all parts of the country to formulate new and appropriate materials drawn directly from the communities in which they live.

Sincerely, yours,

WOODROW WILSON.

INTRODUCTION.

The Lessons in Community and National Life are intended first of all to lay the foundations for an intelligent enthusiasm for the United States. Our schools have lacked that emphasis on nationalism which has been characteristic of European schools. Even our history courses have been meager and have for the most part treated of periods so remote that pupils in the schools have not cultivated a true idea of the unique characteristics of our national civilization. Though we have a continuous system of free education and a broad view regarding the training of girls, though we have universal franchise and freedom of organization, though our democracy has developed beyond that of any previous historical period, our pupils have been left without knowledge of the fact that these are unique possessions shared only in part by other progressive nations. The Lessons are accordingly filled with concrete descriptions of American institutions, and the significance of these institutions is made as clear as exposition and explanation can make it.

In the second place, the Lessons in Community and National Life aim to bring industry into the schools in a way which will appeal to the intelligence of pupils and will intellectualize all later contact with practical affairs. There is a very legitimate demand urged on the schools at this time that they prepare for industry. If the schools meet this demand only by furnishing the same kind of training in skill that industrial establishments might give, there will be little or no gain to society. If, on the other hand, the schools by appropriate recognition of industry as the expression of human genius and human cooperation can give pupils ideas as well as skill to guide them in later practical life, then the schools will have made a genuine and positive contribution to industrial training. The Lessons are accordingly filled with accounts of how industries originated and how they have evolved, so that the pupil may see that industry is a part of man's intellectual conquest of the world.

In the third place, the Lessons are intended to create a sense of personal responsibility, which can result only when the pupil is

shown how his life is interdependent with the life of other members of society. The child's first experiences with social life are those of a dependent and a consumer. There is little sense of responsibility until one begins to think of himself as obligated to consume wisely and to contribute to production. In these days when every individual in the Nation must conserve and when the responsibility for wise use of everything is a national duty, there are a unique demand and a unique opportunity to give pupils training in civic responsibility.

The method of securing these three ends is to present in the form of short sketches certain descriptions of the facts of national and community life. Each lesson is a unit intended to be read and studied by the pupil. The lesson is carefully prepared by a specialist and is filled with information which will reward the pupil for his reading. Each lesson is also part of a series in which the different lessons approach the same central theme from various angles. The Lessons do not exhaust the theme which they illustrate. At the bottom of each page series of questions are set down in the hope of stimulating the pupils as well as the teachers to carry the methods of the Lessons further. Especially is it hoped that the Lessons will lead to studies of the local institutions which are around the school. A genuine study of community life must take up the familiar environment at the door of the schoolroom. The laboratory for these Lessons is the home environment and the industrial environment of the pupil.

It is hoped that the Lessons will lead teachers and school officers to new efforts in the direction of a vital study of community life and that they will encourage publishers to bring together in available textbook form much material of a similar type.

The immediate purpose which gave rise to the Lessons should also be kept in view. The Nation has need of the help of every child within its borders. The food supply of the world is running low. Our Allies are in want. Our children must learn to save. It is believed that a free people can be appealed to effectively if the case is clearly laid before them. American children are not to be ordered to deprive themselves of familiar luxuries; they are to be told how urgent the need is. The lesson of civic responsibility, if learned in this rational way, will effect the saving that the Nation needs.

CHARLES H. JUDD.

LESSONS IN COMMUNITY AND NATIONAL LIFE.

SERIES B.

Chapter I.

SOCIAL ORGANIZATION AND THE EFFECTS OF WAR.

The necessity for cooperation is not confined to the individuals of a community, but it extends to all the nations of the world. No country produces everything that it requires. All have needs which must be met by the importation of goods from other countries, often in the farthest parts of the earth. A complex system of commerce has developed and nations have become more and more dependent on each other because the interchange of products encourages specialization of industry. When war begins the ordinary course of trade is disturbed, and many readjustments are required which are exceedingly troublesome. Scientific study has solved some of the most serious difficulties.

Even in its simplest form, the needs of society are many and varied. The pioneer farmers were independent to a great extent of the rest of the world, but their lives were filled with exhausting toil. They used simple hand tools, and their products were limited in quantity and poor in quality. The use of power machinery and the development of trade and transportation came in natural course, bringing relief from the hardest tasks and, with it, greater comfort in home life.

Lesson B–3 begins the study of the factory system and its part in determining the conditions of life. The use of machinery lightened the load of manual labor which man had borne in his earlier days, and it brought about radical changes in his manner of living. Each worker has become a specialist, and the article which he works to produce is made by the cooperation of many individuals. The self-sufficing farmer produced all the goods which he used; the modern worker uses little that he makes and makes little that he uses. He exchanges his labor for money, and his money for goods to supply his wants.

Lesson B–4 introduces the problems of urban life. Men congregated in cities can not produce their own food, and cities could not exist if it were necessary for them to do so. The same sort of cooperation that exists in a factory is required to feed a city. Men cooperate upon farms, vineyards, and orchards to supply the products which sustain life; other men cooperate to transport those products to the cities, and still other men cooperate to distribute them to the consumers.

LESSON B–1. THE EFFECT OF WAR ON COMMERCE IN NITRATE.

By LOUISA NAGELY,

School of Commerce and Administration, University of Chicago.

Anyone who has studied geography knows that rubber comes from tropical countries, especially from the forests of the Amazon Valley. He knows that tea comes from China and Japan, that there are certain regions of the world well supplied with coal, and so on through a long list of those things which are needed for modern life and modern industry. The fact that one country can supply the needs of the world for a particular commodity

has resulted in the development of trade between nations, and this trade makes nations very dependent on one another. At the same time exchange between various countries makes it possible for everyone to have a share in all the good things that the world produces. The general lesson that we are all dependent upon one another might have been learned by a study of the industries of ordinary life, but that lesson has been very forcibly brought to everybody's attention during the war, because many of the ordinary forms of trade which existed previously have been entirely cut off or seriously disturbed by the interruption of shipping and by the separation of nation from nation because they are enemies.

WHEAT SHORTAGE.

One very striking example of this is the shortage of wheat. Before the war western Europe imported a great deal of wheat from southern Russia. At the present time there are great quantities of wheat stored along the shore of the Black Sea, but this wheat can not be exported; so the world suffers.

CHILE SUPPLIES THE WORLD WITH NITRATE.

Another illustration of international cooperation and interdependence can be found in the relation of Chile to the rest of the world during the war. This country, which occupies a narrow strip along the western coast of South America, has what is called a natural monopoly of nitrate. This means that it has a supply of nitrate which is so much greater and so much purer than that of any other nation that everybody imports the nitrate that he needs

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Materials with which teachers and students may supplement these lessons will be found in the following books:

FOR OLDER PUPILS.

Henry Clay—Economics for the General Reader. Macmillan.
R. L. Ashley—The New Civics. Macmillan.
L. C. Marshall, C. W. Wright, and J. A. Field—Materials for the Study of Elementary Economics. University of Chicago Press.
Report of the Thirteenth Census of the United States. Especially for the lessons in this section: Classified Index to Occupations.

FOR INTERMEDIATE PUPILS.

A. W. Dunn—Community Civics. D. C. Heath & Co.
William L. Nida—City, State, and Nation. Macmillan.
Richman and Wallach—Good Citizenship. American Book Co.

FOR YOUNGER PUPILS.

Mabel Hill—Lessons for Junior Citizens. Ginn & Co.
Readers by Carpenter on various incidents, such as "How the World is Fed." American Book Co.

from Chile. It happens that nitrate is of great importance both in the peaceful occupation of agriculture and in making gunpowder for war.

There is a great deal of nitrogen in the world, but it is difficult to get. The atmosphere is made up of nitrogen to the extent of about 80 per cent, and there is a great deal of nitrogen in the soil. Plants and animals have nitrogen in their bodies and need it for growth. In spite of the fact that nitrogen is everywhere present, it can not easily be separated from the other substances with which it is mixed.

THE SOURCE OF THE SUPPLY.

There is a belt of land about 500 miles long and 10 miles wide lying about 15 miles east of the coast of Chile between the coast range and the Andes, where great quantities of nitrate are deposited. There is very little rainfall in that region. The nitrate therefore has not been washed away. Many theories have been advanced to explain the formation of the nitrate deposits. Some believe that rocks have been dissolved and that water brought the nitrate to the hollow ground, after which the water evaporated, and since there is no more rain the nitrate has remained behind.

Others believe that electrical discharges in the Andes Mountains have produced these deposits from the air. There is some ground for the acceptance of this theory, because science has developed ways of extracting nitrogen from the air through the use of powerful electric currents. At all events, the deposits are there, and the whole world goes to Chile for nitrate.

NITRATE USED AS A FERTILIZER.

One important use which is made of nitrate is in agriculture. About 100 years ago a Scotchman living near Iquique sprinkled some of this nitrate over a part of his garden. He found that that part of the garden flourished, while the rest did not. He sent some of the soil back to Scotland, where it was analyzed, and in this way the value of nitrate as a fertilizer was discovered. Ordinary plants

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1. Make a list of some of the imports which you use every day. Tell from what place each article probably came.

2. "International trade helps us satisfy our wants in two ways. It lets us get commodities we could not otherwise get and it lets us get them more cheaply." Give illustrations.

take the nitrate out of the soil, and after a number of crops have grown on that soil it is necessary to put more nitrate in, or the impoverished soil will not be able to produce new crops. It has been found, for example, that an acre of land which will produce only 20 bushels of wheat without fertilization will yield 32 bushels if nitrates are spread on the soil. In the same way the production of rye can be increased from 15 to 25 bushels per acre, and the production of potatoes from 130 to 210 bushels per acre. Before the war Germany used every year 600,000 tons of nitrate for fertilizer.

NITRATE ESPECIALLY NEEDED IN WAR.

The other use to which nitrate is put is that of manufacturing high explosives. Nitric acid, which is one of the most powerful acids known to the chemist, is produced from nitrate. There are other manufacturing processes besides the making of explosives which require nitric acid. Before the war Germany used 300,000 tons of nitrates from Chile in her manufacturing operations, especially in making munitions. Other countries also use large quantities. In 1890 Chile exported something over a million tons. In 1911 more than two and one-half million tons were being sent away, and 100 establishments along the narrow strip produced material for shipment.

DISTURBANCE OF CHILE'S COMMERCE.

It is easy to understand what happened at the opening of the war. There was a great disturbance in the trade between Chile and other nations. Approximately one-third of Chile's exportations had been going directly to Germany, and when Germany could no longer import this material from Chile, because of England's blockade of Germany, the disturbance was felt very keenly in both countries. The laborers in Chile who had been employed in preparing the nitrate for exportation were suddenly thrown out of work. The Government of Chile tried to provide at public expense for the employment of those men. They were taken to other parts of the country and used in agricultural enterprises. In doing this the Government was seriously handicapped because

3. Bananas can be raised in hothouses in Canada. Would Canada be wise to get her banana supply in this way?

4. People talk of "deficit" and "surplus" wheat countries. Name some representatives of each class.

COMMERCE IN NITRATE.

one of its greatest sources of revenue is the taxes imposed on nitrate.

GERMANY'S DIFFICULTIES.

The difficulties that Chile encountered were, however, far less vital to the existence of the country than the difficulties that Germany encountered. Her agriculture and her manufacture of munitions made it absolutely imperative that she have nitrate. At the opening of the war Germany had a considerable supply of nitrate on hand, but as soon as the war began it made great inroads into this supply. It takes from 3 to 10 tons of nitric acid to make 1 ton of explosives. Germany was using, after the war was well under way, 400 tons of explosives every day. With regard to her agriculture the situation was hardly less acute. If she could not get nitrate, her crops would be reduced 25 per cent, and this furnished perhaps as serious a problem as that of supplying explosives.

SCIENCE TO THE RESCUE.

What Germany did under these conditions was to turn to the more expensive method of making nitrate out of the air. German scientists and engineers were put on the problem of developing factories which would make nitrate. It had been known for years that powerful electric currents would draw nitrogen out of the air and make it available for commercial purposes. This method was originally tried at Niagara Falls and in Norway, where there is abundant water power.

Certain chemical methods also can be employed. These methods had never been extensively used because they are so expensive as contrasted with the importation of nitrate from Chile. But the expensiveness of the process did not stop Germany. She must have the material at all costs. It is said that she has invested since the beginning of the war not less than $100,000,000 in equipment to supply nitrogen. It is said that her engineers spent a year and a half of work night and day equipping the factories and getting them in working order.

---

5. What other materials besides nitrate are used in unusually large quantities in war?

6. Are there many natural monopolies in the world? Can you name any commodities which are produced exclusively in your State? In the United States?

7. Is all the territory of Chile a nitrate region?

COMMERCE READJUSTED ITSELF.

With the later developments of the war the condition in Chile has been brought back to something like what it was before 1914. England and her allies, who retain command of the seas, have greatly increased their importations of nitrate from Chile and now all except those works which are owned by the Germans are again in operation, and Chile has large contracts to supply the allies with this material.

HOW NITRATE IS EXTRACTED.

It may be interesting to describe briefly the process by which the nitrate is extracted. The raw material which is found in the deposits is called "caliche." It is not hard to mine, because it is close to the surface of the earth. In some places there are layers of dust and rock 25 or 30 feet deep, but in other places the deposit is within a few inches of the surface of the ground. The deposit is from 1 to 6 feet in thickness. It contains not only nitrate, but also other substances, such as salt, borax, and iodine. It is broken up by boring into it and exploding a charge of gunpowder. The broken pieces are then crushed and carried to great tanks, where boiling water dissolves the nitrate and separates it from the other substances.

Since there is no water in this region, the development of the industry has required the piping of water from the distant Andes Mountains. Some of the water is used several times over. Before the pipes to the mountains were built, salt water from the sea had to be brought in and distilled, and sometimes fresh water was brought in ships.

The tanks which receive the caliche are made of iron and have a capacity of about 70 tons each. They are 32 feet long, 9 feet wide, and 8 feet deep. An ordinary plant has from 20 to 30 tanks.

After the boiling water has taken up as much nitrate as it can carry, it is drawn off into other tanks. Since the solution contains a few of the more easily dissolved impurities other than nitrate, it is necessary to introduce substances that will help to remove the impurities. For this purpose wheat flour is sometimes employed. After the solution has been purified, it is drawn off into tanks placed 10 or 12 feet above the ground to permit the circulation of air. In the final tanks a part of the water evaporates and the nitrate crystallizes. It then has much the appearance of rock salt. It is now shoveled from the tanks into cars and

allowed to dry for several days. After this, the material is packed in bags which protect it from the air, because it absorbs water very rapidly.

WASTE.

The problem of disposing of the waste from the works is a serious problem, because the quantity sometimes amounts to one or two thousand tons a day. The waste contains a small percentage of nitrate. As the supply runs out it is not unlikely that some future generation will find it profitable to rework the piles of waste that have been thrown out.

THE CIRCLE OF TRADE.

If one follows the nitrate away from Chile one has a very interesting example of the complexity of modern trade. The nitrate goes, for example, to the United States, which is now Chile's best customer, and is used for agriculture and manufacturing. Goods are sent back to Chile in payment for nitrate. Only a small part of what is sent back in this way goes to the region from which the nitrate was taken. Some coal and some machinery go directly to the pampa. A good share of what is sent back in payment for the nitrate goes to other parts of Chile. The people who live in Chile, but not in the nitrate belt, support themselves by various occupations, chief among which is the production of food for the workers in the nitrate region.

The nitrate belt produces nothing in the way of food. It is an arid desert region. The lack of rain makes it necessary to bring the water which is used in extracting the nitrates; but the people in this belt would not want it to rain, because the water would wash away the deposits on which they depend. To this desert food and water and coal and machinery must be brought from other parts of the world.

TYPICAL OF COMMERCE.

It would hardly be possible to find a better example than this of what is involved in trade. Chile has a natural monopoly which ultimately becomes so connected with the life of the whole world that every civilized country is interested. This shows the extent to which interdependence has grown up in modern life.

Capital from every great country is interested in the Chilean pampa—from Germany, Great Britain, Belgium, France, Austria, and the United States. The Republic at the extreme southwestern

end of South America is involved commercially in the war, though politically neutral. Indeed, in some ways the people of that remote country have suffered more than we.

WAR AND THE NITRATE FIELDS.

This is not the first time that Chile has felt the effects of war through her nitrate deposits. In 1879 there was war between Chile, Peru, and Bolivia. One of the chief causes of this war was a dispute about the ownership and control of the nitrate deposits. The war lasted until 1883 and ended with Chile in possession of the nitrate fields.

THE STUDY OF COMMERCE.

This lesson has not been given merely for the sake of showing how the world's supply of one important substance is procured. Trade in nitrate is a type of what is happening with every kind of commodity. Usually the case is not so clear, and the student who would understand the world in which he lives must look more carefully for the lines of trade and for the influence of nation on nation and of war and peace on production and exchange.

It is only by looking at the more complicated cases through some such clear-cut case that one can begin to understand the ways in which men have become dependent on each other.

We shall have an opportunity in the next lesson to see how for a time a few pioneer farmers were independent to a great extent of the rest of the world. But even they began at an early stage to cultivate the forms of cooperation that have resulted in the modern ways of living.

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LESSON B–2. THE VARIED OCCUPATIONS OF A COLONIAL FARM.[1]

In colonial times there was very little trading. The roads were few and in poor condition. There were no railroads and no opportunities on many of the farms to make use of boats and water transportation. People had to be independent, that is to say, self-sufficing. The farm was not merely a place for raising live stock, poultry, grain, vegetables, and fruit; it was also a manufactory of almost everything needed in daily life. The farmer and his family produced the raw materials and also made them into useful articles.

THE MANY TYPES OF THINGS MADE.

Generally speaking, these articles included: (1) Wearing apparel and household textile supplies; (2) household implements, utensils, furniture, necessities, and comforts; (3) farming implements, building materials, and general supplies. A few things were purchased from occasional traders who came to the farm. A few things were purchased in the towns on the infrequent visits of the farmer to the more densely settled districts. Thus the scythes were made at the forge, and only the handles were made on the farm. Saws and axes were imported from England, or later from those regions where iron was abundant and easy to secure. Not all metal articles were imported. The soft pewter metal which went into the forks and knives could often be worked into household utensils in the domestic factory—the home.

A list of the articles made on a colonial farm is bewildering in its variety to a modern reader. Space will not permit a detailed and systematic account of how all of the necessities of life were supplied.

Some notion of the complete picture may be constructed from an account of the following typical activities: (1) The making of lumber and furniture; (2) the making of tools with which to work the farm; (3) the making of tools required to deal with the products of the farm; (4) the making of lighting materials; (5) the making of leather articles such as boots, shoes, breeches, hunting shirts, moccasins, leggings, gloves, and caps; and (6) the

[1] Prepared by R. M. Tryon, assistant professor of the teaching of history, University of Chicago.

This lesson shows the manifold wants of man even under simple conditions. It shows how in earlier days men met their wants in a self-sufficing way. This is in sharp contrast with modern cooperative ways of meeting wants.

making of cloth from wool, cotton, or flax. These different kinds of activities will be outlined briefly in the order given.

LUMBER AND SHINGLES.

Before the construction of sawmills, and to some extent even after sawmills were in operation, it was necessary for the farmer to make the material entering into the construction of his house and other buildings, and into the making of the chairs, tables, and beds which furnished his home.

The first houses in a new settlement were built of logs hewn from the forest trees. Later the hewn logs were replaced by lumber, the product of the "saw pit." This saw pit consisted of a platform and a pit, dug into a hillside. Here with a handsaw two men, one above and the other below, were able to cut up logs so as to produce about 100 feet of boards in a day. When one thinks of the contrast between the labor involved in making boards in that way and at a modern sawmill, one understands why the coming of machinery led to a change in method of work and indirectly to new methods of living. Rough clapboards were used to cover the first round or hewn log houses. Later, shingles were rived by hand from "bolts" or blocks of wood. At first the shingles were used just as they came from the frow, the instrument used in the riving. Later they were shaved and made perfectly smooth. A man could shave about 1,000 shingles in a day. Wooden hinges and door latches were made, and also hand-wrought iron nails to be used in the construction of the house and of the furniture. We read that it was not uncommon for the country people to erect small forges in their chimney corners and to make nails in winter and on evenings when little other work could be done.

FURNITURE.

The first settlers brought some furniture from Europe with them, but as they migrated inland it proved to be too bulky to

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1. Name all the different kinds of transportation used nowadays. How many of these existed in colonial times?

2. "The colonists characteristically settled along the seacoast or along rivers." Why?

3. Did they have the same kinds of boats and wagons then as we have now?

4. What is the difference between dirt roads and macadam roads? What are asphalt roads?

move, so that the inhabitants of each new settlement were compelled to make within their homes such articles as tables, stools, cupboards, and bedsteads.

One way in which the parts of the furniture were fitted together can be illustrated by describing the making of a three-legged stool, which was a common article of furniture in the colonial home. Three holes were bored in the piece that was to be the top of the stool and round legs were driven firmly into the holes. The boring of the holes was done with an auger which, like the other metal tools necessary in the household, had been brought from England or purchased from a trader. When the legs had been firmly driven into their places they were sometimes made secure by wrought-iron nails. In the larger pieces of furniture wooden pegs were frequently used instead of nails. Even bedsteads and tables were often made in the same manner as stools.

FARM IMPLEMENTS.

The farmer not only made his house and furniture from lumber, shingles, and nails of his own manufacture, but he had to make the implements with which to work his farm. These consisted of vehicles of transportation, plows, harrows, pitchforks, handrakes, shovels, ax handles, hoe handles, scythe-snaths, singletrees, doubletrees, clips, clevises, laprings, ox yokes, and harness for his horse if he chanced to have one. All manner of makeshifts were often necessary to supply some of these articles. For example, horse collars were made of corn husks; hames of crooked roots; clips, clevises, and laprings of hickory withes; ox yokes of bent hickory wood; traces and bridles of twisted deer hide, and pitchforks from forked boughs or antler horns.

The first vehicles for transportation were nothing more than log boats and sleds, wheels being luxuries which could not be provided. Later, crude but serviceable wagons were made with wheels sawed from the trunks of trees. Axles were made from

5. Why did the colonial people not make better roads for themselves?

6. Did the people on the colonial farm make everything they needed?

7. What is meant by "self-sufficing," as applied to colonial life? Are modern city families self-sufficing? Modern country families? Are there any regions or countries now in which families are self-sufficing?

8. Find out in what ways the life of the southern mountaineer of to-day resembles the life of the colonial family.

9. Where did the colonial family get the money with which to buy things from town?

hickory or white oak, and a coupling pole of like material connected them.

Plows and harrows were made on the farm with little difficulty. At first the harrows had wooden teeth and the plows wooden moldboards. In the course of time it was possible to procure from the blacksmith shop iron teeth for the A-shaped harrow and for the point, share, and wing of the plow. With the introduction of the ironmaker's trade came the beginnings of a new era. The farmer had only to make the beams for the harrow and the wooden beam, handles and moldboard for the plow. He began to be dependent on someone else for the metal parts. Cooperation had begun. It resulted in better implements and also in a stronger bond between members of the community.

MILLS OF VARIOUS KINDS.

Besides making the implements with which to till his farm, the farmer and his boys had also to make the tools with which the products of the farm were brought into condition for use. They made their own cider mills, cheese presses, spinning wheels, flax brakes, swingling knives, wool combs, looms, and implements used in making hominy and meal.

Here again the contrast with modern methods is impressive. The farmer of to-day sends his corn to the miller, who does very much more cheaply and rapidly and easily with power machines the work which in those earlier days was done by hand with simple devices that the family could construct. The secret of the increased cheapness and rapidity lies in the fact that the modern miller has, through machinery, harnessed the forces of nature, and makes them do his work for him.

We shall gain a clearer view of the effort that had to be invested in preparing food if we take up in detail the preparation of hominy from corn. This was done by means of the "hominy block." The block was made of a large piece of wood about 3 feet long, with a

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10. "The colonial farm was both a farm and a factory." Is the same true in every respect of a modern home in a town?

11. Find pictures of the machinery which is now used in making lumber products. Many of the articles mentioned throughout this lesson are illustrated in the dictionary or in an ordinary encyclopedia.

12. How commonly are shingles now used for roofs? Why are other materials employed instead of shingles?

13. Why are there so few log houses to-day in a modern city? Why in a large city are there so few frame houses?

bowl-shaped hollow burned in one end. The shelled corn was put into this bowl and cracked with a pestle. Sometimes a simple hand pestle was used. In the fall of the year, while the corn was soft, the block and pestle did very well, even for making fine meal for johnnycake and mush, but the work was slow when the corn became hard.

A kind of power pestle or sweep was sometimes used, harnessing the elasticity of nature and thus lessening the toil of pounding grain for meal. For this sweep a pole of some springy, elastic wood, 30 feet long or more, was used. The larger end was wedged under the side of the house or under a stump. A supporting fork was placed under the pole about a third of its length from the butt. This was so arranged as to raise the small end of the pole about 15 feet from the ground. From the small end was hung a heavy piece of wood 5 or 6 inches in diameter and 8 or 10 feet long. The lower end of this was rounded so as to serve as a pestle. The long, springy trunk to which it was fastened above tended to overcome the force of gravitation and to raise it from the bowl below, in which the grain was placed. The worker used this great pestle, pulling it down and crushing the grain in the hollowed block. He then released the pestle, which was raised by the sapling to which it was attached above. Sometimes two workers used the sweep, crushing the grain more effectively by their combined strength.

The hand mill was also used and made better meal than the mortar or grater. The hand mill was like that used by the Indians and other primitive people. It was made of two circular stones, the lower of which was called the "bed stone," the upper one the "runner." The upper stone was turned with a handle or staff, and the grain between the stones was ground to flour.

Water mills and windmills for grinding grain were among the first mechanical conveniences set up by the colonists. Food is an absolute necessity and much thought would naturally be given to finding devices for procuring it more cheaply. The work of preparing grain could of course be done much more easily and

14. Have you ever seen a log house? Are there any parts of the country where they are still common?

15. Why do we not have small forges in our chimney corners nowadays, so that we might spend our evenings usefully in making nails?

16. Where did the furniture in your home come from? Where did the various woods that went into it come from?

17. Why were the colonial settlers able to bring bulky furniture from Europe but not to move it inland with them?

cheaply when the winds and waterfalls were harnessed to help man. The primitive stone mills and the pestles did not disappear, however. Not everyone lived near a waterfall and the wind could not be depended on to blow when it was needed. It is easy to see that such a dependable machine as the steam engine would have been welcomed heartily. It did come later. Then primitive methods quickly disappeared.

CANDLES.

The colonists had to provide themselves with lights for their evenings. Kerosene, gas, and electricity were unknown, and less satisfactory means had to be used. One such means was candlewood, which was nothing more than the knots and hearts of resinous pine trees. Then, too, rushes were used after being dipped in tallow or grease. Oils from fish, bear, whale, and moose all did good service. Most important of all, however, were the candles made from the tallow of the berries of the bay, a bush found in all the Colonies, and candles from animal tallow, whale oil, and honeycomb wax.

Bayberry candles were made from the wax or tallow extracted from the berry of the bay, a plant which grew abundantly in the neighborhood of the sea. The berries were gathered late in the fall and thrown into a kettle of boiling water. The fat melted out and floated to the top of the water and was skimmed off. On cooling, this tallow was melted over again, to refine it. Refined bayberry wax has a transparent green color. Candles were made of this tallow just as they were made of the tallow from the animals killed on the farm. Before the advent of candle molds, which made it easier to make candles, and before the coming of the itinerant candlemakers, candles were made by dipping. Wicks were prepared and dipped into hot wax or tallow. They were then lifted out and the wax allowed to cool and harden. The dipping was repeated until enough wax had hardened around the wick to make a usable candle.

All this is very different from the present methods by which business concerns set up large machines or factories for making

18. Why did they use wooden pegs instead of nails to fasten parts of furniture together? Have you ever seen any furniture made in that way? Why should any furniture be made in that way now?

19. Why are there so many furniture factories at Grand Rapids, Mich.?

20. Why did they use sleds instead of wagons at first? What kind of wheels were first used for their wagons?

gas or electricity and then install gas mains or electric wires to carry means of lighting to our houses. Sometimes we say that the colonial way, where each family was largely self-sufficing, was an "individual" way of meeting wants, and our way, where great numbers of people contribute to meeting even a single want, is a "social" way. Our way is certainly a more efficient way.

LEATHER ARTICLES.

The hides of animals killed for food on the farm, or of the deer, squirrels, raccoons, rabbits, beavers, and foxes shot or trapped in the woods, were used for many purposes. Deerskins were made into hunting shirts, breeches, coats, leggings, and moccasins. Gloves and mittens were made from the skins of squirrels and beavers, caps from the skins of raccoons, bears, foxes, cats, rabbits, and woodchucks. Bearskins were made into beds and bedding. From the deerskins and cowhides, moccasins, shoepacks, and shoes were made. The preparation of the material and the making of all of these articles were done on the farm, the work being the duty chiefly of the men and boys.

Tanning the hides was a long, laborous process. They were first thoroughly dried and then thrown into a vat of strong lye. The lye caused the hair to loosen and fall off. The skins freed from hair were then placed in another vat of liquid made from black-oak bark, and were allowed to remain several months. When taken out of this they were scraped and softened with bear's oil. They were then ready to be made into shoes, boots, and harness.

The tailoring of the leather suits usually fell to the male portions of the family, since the hard material was rather difficult for the women and girls to handle. Large needles or shoemakers' awls were used in the sewing process. The thread was made either of the sinews from the legs of the deer or by cutting a long strip from the deerskin. The latter was called "whang." It was cut as small as possible so that it could be used as thread in the awls or needles. Although the products of this crude tailoring were often rough and uncomfortable, especially after getting wet and stiff, they were very useful in protecting their wearers.

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21. What are horse collars made of now? Why did the colonial farmers use corn husks to make them?

22. Why did the colonial farmers not set up a blacksmith shop immediately when they arrived in this country, and let one of their number spend his time working on iron products for all of them?

CLOTH.

While the farmer and his boys were busy supplying leather clothing, the wife and daughters were manufacturing cloth to be used for wearing apparel and as household textile supplies. Cloth was made from cotton, wool, or flax. The making of these involved the preparation of the raw material for the spinning wheel and loom and bleaching and dyeing the finished products.

TRANSITION TO FACTORIES.

These descriptions indicate something of the variety of the products of the colonial home. They show that the colonial family was largely self-sufficing. They also show that modern ways properly used mean a fuller life. The members of the colonial family had to do too many different things to do any one thoroughly well; so that the quality of their products was not equal to the quality of the goods produced to-day. Nor did they produce as great a quantity as the same number of people with the same tools could have produced had each been able to specialize on a different occupation and then trade his products with others. Trade and transportation have enabled us to specialize to-day, so that we can secure better quality and greater quantity.

Trade and transportation are not the only reasons for this improvement. We have harnessed the forces of nature. We have power machinery. Machines work more precisely than people can and turn out vastly more goods. Our business men have set up a great number of special factories, each making a single kind of article. These factories can make the articles so much better and so much more cheaply that one by one the trades formerly carried on in the family have been taken over by the factories. The effect of this change on the life of the family we shall learn more fully in later divisions of this course.

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LESSON B–3. A COTTON FACTORY AND THE WORKERS.[1]

When one talks about a factory he ordinarily refers to a building and machinery. One remembers, to be sure, that there are people who work in the factory, but these people are usually thought of as belonging somewhere else—in their homes or on the street. As a matter of fact, the modern factory has a great influence on the lives of the people who work in it. That influence may be understood better after a view of what goes on inside a factory. The situation inside the factory is very different from that in the colonial home where each worker followed the whole process of making things from beginning to end.

WHEN FACTORIES FIRST CAME.

It was pointed out in the last lesson that in earlier days in this country there were no factories. People lived in scattered towns which were half rural or, as the Indians were driven back, families lived quite apart from their neighbors in the open country. They provided themselves with the things they needed by home industries.

Then came machinery driven by power. The rate at which materials could be made into useful things was so much increased by the use of power that the place where power was to be found became a center around which people gathered and lived. In New England the waterfall became an attraction for a settlement which rapidly grew into a city.

It was in 1771 that spinning began to be done by water power in England, and at about the same time power factories began to be built in New England. In England when the steam engine came into use for spinning, in 1785, centers of population grew up where fuel was most easily accessible. Much later coal became an important factor in American life, but for a long time it was the waterfall that explained the factory city.

These dates are not to be considered merely as dates when something happened in the world of machines and spinning. They mark the time when a great transformation began in men's way of living.

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[1] Prepared by Gertrude Van Hoesen, assistant professor of home economics, University of Chicago.

The cooperation of many people, the special skill contributed by each one, their interdependence on each other and on social organization are here shown. A beginning is made of the study of the part which the factory system plays in determining conditions of living.

THE FIRST STEPS IN MANUFACTURING COTTON.

We shall take for the purpose of our study a cotton mill in a New England town where cloth is made from the raw cotton shipped from the fields of the Southern States. Let us begin with the cotton as it comes to the mill, not forgetting that it has had a long journey coming to the place where machinery driven by power can change it into something other than it is.

The cotton arrives in big bales, which are opened in the factory, and the loose cotton from many bales is mixed in order to get a uniform quality. The mixing may be done by hand, but it is often done in a machine called a "bale breaker," which at the same time begins the cleaning of the fiber.

The cotton next passes through machines called "scutchers," where it is beaten in order to remove all loose dirt. It is then put into machines called "pickers," which continue cleaning, and deliver it in sheets like cotton batting.

The cleaning is completed by a machine known as a "carder." This combs out the fibers, removes all sticks, leaves, and remaining foreign particles, and straightens and disentangles the fibers.

From the carding machine the cotton fibers are drawn off in a round rope or ribbon about an inch in diameter called a "card sliver." Sometimes the carding process is repeated or the card sliver is put through a "combing machine" which takes out the short fibers and arranges the long fibers so that they lie in the same direction.

MAKING THE THREAD.

The fibers of cotton which have been carded and combed are now taken to a "drawing machine" where from four to eight slivers are drawn together. This process of arranging the fibers

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1. "It costs a great deal to build a factory and put it into operation." Make as long a list of these costs as you can.

2. We say that "the industrial revolution" began the latter part of the eighteenth century and is continuing to the present day. What does this mean?

3. We contrast the "domestic system" with the "factory system." Draw up a list of the differences from the point of view of the worker. Make another list from the point of view of the consumer or user of goods.

4. Why did the inventions connected with spinning come in about the middle of the eighteenth century? If Hargreaves had died in his infancy, do you suppose this invention would never have been made?

and drawing them out into finer and more even slivers is carried on by a number of machines called "drawing frames" which keep pulling out the card sliver until it is a slender collection of fibers ready to be twisted into a thread by the spinning machines.

The spinning machine is sometimes called a "mule;" sometimes it is of a form known as a "ring frame." The mule is a device which was invented in England. It is nothing but a power-driven form of the old-fashioned spindle which was used in hand spinning before the time of machinery.

The first improvement in the hand spindle was made in 1764, by a man named James Hargreaves, a poor laborer of Blackburn, England. This device was improved by a number of subsequent inventors, especially by Samuel Crompton, of Bolton, who named his machine the "mule." The ring frame was invented a little later by Richard Roberts. Both of these devices take the fibers that have been drawn out by the drawing frames and twist them into cotton thread.

The improvements which have been made in recent years may be understood when it is stated that a single mill operator can at the present time take care of 125 spindles in operation. In recent years, too, the rate at which the spindles rotate has been increased until it has reached what is regarded as the probable limit—namely, 10,000 turns a minute. The contrast between the older devices and those now in use is very impressive if one remembers that in the early days the woman turned her spindle with a foot treadle and used a single spindle to which she fed the fibers by hand.

WEAVING.

When the thread has been made by the spindles, it is wound on bobbins and carried to the weaving machines where it is turned

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5. Why did they use coal so much sooner in England than in this country for power factories?

6. What was the "great transformation in men's way of living" that happened when power factories supplanted home production?

7. Why do we ship cotton from the South to New England cotton mills? Why not build a cotton mill on each cotton plantation?

8. What is a cotton plantation?

9. Describe the method of shipping cotton from the South. What part of the plant do we use in textiles?

10. Why is it that cotton in different bales is often of different qualities?

into cloth. We leave now the spinning department of the factory and go to an entirely different set of machines. Indeed, the spinning and weaving are usually done in entirely different buildings or even in different factories.

The machine that does the weaving is called a "loom." It interlaces the threads with each other, one set running at right angles to the other. Anyone who looks at an ordinary piece of cloth will see that there are two sets of threads. One set is known as the "warp" and runs lengthwise of the cloth. The other set runs back and forth between the fibers of the warp and is known as the "weft" or "filling." Sometimes different grades of thread are used for the warp and the weft. The threads made from the longer, better fibers are used for the warp, while the shorter fibers serve for the weft.

The parts of the loom are designed to hold the threads in such position that they can be interlaced and driven together until the closely woven threads come out as cloth.

One part of the weaving machinery which immediately attracts the eye of the visitor is the little shuttle which carries the weft back and forth between the threads that make up the warp. The warp appears as a series of parallel threads held in position while the shuttle plays back and forth between them. The alternate threads of the warp are held in position by a part of the loom which is known as the "heddle." This part of the loom can be moved up and down so that each alternate thread will at one moment be above the shuttle as it travels and the next moment below. The heddle is raised and lowered as the shuttle is thrown back and forth between the threads of the warp.

Formerly the shuttle was thrown by hand, but in the automatic looms used in modern factories all of this work is done by

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11. If you were going to build a cotton factory, how would you decide how many scutchers to have for each bale breaker?

12. Why are there now so many more steps in preparing the fiber for the spindle than in earlier times? If the spindles in the modern factory rotate so much more rapidly than domestic spindles, how can one worker take care of more than one spindle?

13. What proportion of the world's cotton is raised in the United States? Information on a subject like this can be found in certain Government reports.

14. What proportion of the world's cotton cloth is woven in the United States?

machinery. Here again the single workman can manage a number of machines. His chief business is to see that the threads do not break and that the machine is constantly supplied with the threads that go into the cloth. Indeed, it is no longer necessary in the most completely equipped factories for the operator to watch for breaking threads, because the machinery has been made automatic and will stop whenever anything breaks. His business is merely to see that the machine is fed with thread. A single operator can attend to as many as 24 or even 28 automatic looms.

These looms have, in addition to the parts above described, devices for controlling each of the threads of the warp and weft so that any desired pattern will appear in the cloth.

DYEING AND FINISHING.

Dyeing and finishing are further steps that enter into the manufacture of cloth and are intended to make the cloth more attractive to customers. Everywhere that we take up the study of human beings and their wants we find there is a demand for the beautiful as well as the useful, and much of the effort of a manufacturing establishment is expended in trying to satisfy the demand for beautiful things.

SPECIALIZATION AND INTERDEPENDENCE.

While reading about all these complicated steps one should not think merely of the machinery and the cotton. Each machine is tended by a man whose duty it is to do just one thing—to card or comb or run the picker or scutcher. Each man is a specialist in one line of work. He becomes very rapid and skillful in this one task.

We should also learn to think of the factory as an illustration of the principle that in modern life we are all dependent on one another. The factory as a whole is dependent on the cotton grower far away. It is dependent, too, on the manufacturers of

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15. Describe a loom and the process of weaving. Look up a picture of a loom.

16. Take a piece of cloth and ravel it out at the edges to see how the threads are put together.

17. Why should manufacturers bother to make more than one kind of cloth? Does one factory make several kinds?

18. What is meant by saying that the worker at the loom is a specialist?

19. Why should the cotton manufacturer in New England take any interest in the campaign to exterminate the boll weevil in the southern cotton fields?

the looms and carders and other machines which it uses; on the lumbermen and miners who prepared the raw material out of which its machines were made; on the railroads and steamships which bring its raw materials and carry away its finished products.

Inside the factory one worker is dependent on the other. Unless the carder does his work, there will be no fibers to spin. Unless the spinner does his work, there will be no thread for the warp and weft.

The factory, then, is a kind of community in itself. How complex this community is may be realized more fully if one looks at the census. This mentions more than 90 different classes of people concerned in the operations of a cotton mill. A great many of these classes have not been even mentioned in the general description of the factory. Let us name 15 classes, so that the lesson of the specialization of the cotton mill may be clearly fixed in our minds. Some of these we shall recognize from our reading, some not. Some will be encountered again in later chapters:

Manufacturers and proprietors.	Bobbin boys.	Carders.	Cotton shakers.
Managers and superintendents.	Breaker hands.	Cleaners.	Designers.
Foremen and overseers.	Card fixers.	Cloth balers.	Doffers.
Back boys.	Card strippers.	Combers.	

A LABORING CLASS AND A WAGE SYSTEM.

The factory illustrates well another feature of our life to-day—the fact that large bodies of men are working for others and getting wages. We have grown so accustomed to this that we do not realize how very different it is from the situation in the colonial days. As a general thing, the colonial family owned its own workshop, the home. It owned its own tools or simple ma-

20. Why should he take an interest in the outcome of a strike on the railroads?

21. Does it make any difference to the "specialists" who work on the drawing machines whether the specialists who work on the bale breaker and the carders do their work well and in good time? Can they control what these other specialists are doing?

22. Among the various people mentioned in the census report as having to do with the cotton mill, which ones would you regard as most inportant?

23. Do these various "specialists" have as interesting work to do as the men and women had on the colonial farm?

24. If the modern "specialists" do not own the things which they make, why do they work at making them?

25. Who decides how much their work is worth?

chinery; it owned the raw cotton; it owned the finished product, cloth, which it used or occasionally sold. In the modern factory all this is different. The worker does not own any of these things. They are owned by his employers. The worker's main interest in the whole process is likely to be in the amount of the wage which is paid him. It is not easy for him to take pride in the machine he runs, not easy to take pride in the finished product, for he has had contact with only one phase of the process, and the product does not belong to him in any event. Do not conclude from this that the wage system is a bad thing. Like almost everything else, it has good features and bad features. Now we need merely to see that such a system exists. We shall learn more later concerning the way it operates.

In a factory the conditions of work are largely determined by the employer. In the colonial family there was no rigid schedule of hours of work, no prescribed speed of work, in many instances no prescribed place of work. But running machines by power costs money, and the workers are expected to be in their places when the machines start, and to remain there until they stop. Furthermore, it is clear that the worker must adjust his speed to the speed of the machine, and as an individual he has little to say concerning what that speed shall be. If the speed should be too high, he may have to overwork, or get hurt, or seek other employment. Finally, the work must be done at one particular place. Whether that place is well lighted and comfortably heated are matters the worker does not personally control.

Under such circumstances it is not surprising that the workers act together to request good conditions of employment; that the

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26. Did they have many accidents on the colonial farms? What kind of accidents? What kind of accidents are workers likely to have now?

27. "Most employers endeavor to secure good conditions for their workers." Why, then, do we need labor laws?

28. What sort of things are regulated by labor laws?

29. Why should the Government care whether the workers have good working conditions or not?

30. No one worker can control his conditions of work. How, then, can associations of workers have any part in control?

31. "It is easier to gratify our wants since we have factories." Why?

32. Do we want exactly the same things which the early colonists wanted?

33. What difference has the factory made in home life?

34. What is the connection between the existence of factories and the growth of cities?

better grades of employers spend much thought on securing proper conditions, both as a matter of proper treatment of other human beings and as a matter of maintaining large outputs through preserving the health of the workers; and that society, through its legislatures, passes laws concerning such matters as hours of work, sanitation, and safety devices for machines.

THE FACTORY AND OUR WAYS OF LIVING.

The factory has meant a great change in the way we live. Part of this change comes from the fact that the factory can produce things of a good quality very cheaply, so that it is easier for the members of society to gratify their wants than it was before the factory came. This, of course, means a great deal in securing those larger satisfactions so necessary to a full life. Another part of the change comes from the fact that much work which was formerly done in the home is now done in the factory. We saw something of this situation in our lesson on The Varied Occupations of a Colonial Farm. Home life for many factory workers is often mainly a matter of evenings and of days on which the factory is not running. When we think how the home has always been regarded as the basic thing of our lives we see what a great change this is for great numbers of people. Another part of the change comes from the fact that the factory has stimulated the growth of cities. This does not mean that there would be no cities without the factory system. It merely means that they would not be so numerous nor so large, and they would not be the same kind of cities.

We can not now take up all the results that come from the development of cities around factories, nor can we consider here many other aspects of the factory system. Again and again we shall find ourselves studying its outgrowths.

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LESSON B–4. FEEDING A CITY.[1]

A very large part of the business of a city is concerned with supplying the food which the people in the city use from day to day. Most people do not know what a problem it is to feed a city, because they deal in small quantities of food, buying at one time only so much as a single family needs.

WHAT CHICAGO EATS.

If one reads some of the figures that are reported for a great city like Chicago, it is hard to imagine the amounts that are involved. For example, in the report of the Chicago Municipal Markets Commission it is stated that for the year prior to April, 1914, the city of Chicago used more than 15¼ million dollars worth of eggs. This means that the people of Chicago ate more than 444 million eggs in a year. If all these eggs were laid end to end, they would more than reach from the Canadian boundary to the Gulf of Mexico. To think of all the farmers who raised the hens that laid those eggs recalls the fairy tales in the second reader.

During the same period Chicago used 25 million dollars worth of milk and 28½ million dollars worth of butter. Such vast quantities of dairy products tax the producing capacity of Wisconsin, Michigan, Iowa, Indiana, and even Minnesota, to their remotest parts.

The largest item on Chicago's market bill for that year was meat, and it amounted to 86½ million dollars. Like the rest of the country, Chicago depends for its meats on the ranches of the western plains from Texas to Montana.

When all these figures and others like them referring to potatoes, vegetables, fruits, and other foods are put together, one begins to understand why railroads are constantly bringing into the city from various parts of the country what Chicago needs for its table supply.

CITIES DO NOT PRODUCE FOOD.

The ordinary person in a city does not produce very much of what he needs for his meals. When people lived on farms and

[1] Prepared by Katherine McLaughlin, teacher in the University of Chicago Elementary School.

As the factory showed cooperation and interdependence, so does the market. The kinds of material dealt with in the market help to determine the social organization necessary. The lesson also shows in an introductory way the problems of a city.

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kept gardens and cows and chickens, each family produced a large part of what it needed for the year. But people found it advantageous to gather in cities, as indicated in an earlier chapter, and as soon as they began to live in cities it became increasingly difficult to have a garden and to raise domestic animals. Even if there is space enough in a city for each family to have a garden, it becomes more and more difficult for the members of the family to spend the time necessary for cultivating the garden, because they have to go to work at a regular hour and they come home at night with very little inclination to work any longer.

The result is that markets have grown up in the cities which provide the people with the food they need. In smaller towns the markets are supplied by the farmers who drive in from the neighboring regions and bring in small quantities of food. But even in the small towns some of the commodities are brought from greater distances. Meat, for example, is commonly brought from packing houses either in Kansas City or Chicago or Omaha. The neighboring country seldom produces all that the town requires. If it is a wheat-growing district, fruit is not likely to be supplied by the surrounding country, and if fruit is common, cereals must be brought from greater distances. Even in the small towns, therefore, the market has to be supplied from a distance with many of the things that the people want. When the city grows larger, the distance from which the food is brought must increase in the same proportion, because the amount of food which is required is so great that it can not be produced in the immediate vicinity.

As soon as railroad connections are made which will bring produce to the city from long distances, another advantage appears. The variety of material which can be brought is greatly increased, and people have the satisfaction of using on their tables materials that are brought even from remote parts of the world.

THE MARKET OF SOUTH WATER STREET.

There is a street in the city of Chicago which is only five blocks long. It is said to be one of the busiest streets in the world.

1. What part of the effort of a family is devoted to providing food? What are some of the other needs that compare in urgency with this?

2. Make a list of as many agencies as you can which are concerned in providing a city with food.

3. How do people in the big city who work all day making automobile parts or running the elevated railway or copying figures on adding machines know that some farmer will produce eggs and butter for them?

The perishable produce which Chicago needs for its food is handled there every day. A visit to that market street illustrates all of the facts which we have mentioned.

One should picture this short, narrow street, packed with thousands of wagons and automobiles which are coming in or slowly making their way out with the loads of farm products to be distributed to the stores throughout the city. The warehouses and sidewalks are filled with the produce for the day's sales. This produce has been coming in by the carload during the night, and the street begins to be busy at an early hour in the morning—in summer at daylight, in winter before.

Each warehouse specializes in some particular class of produce. One is devoted entirely to trading in cheese. One four-story building is filled with Spanish and Bermuda onions. Another has hundreds of bags of potatoes piled from floor to ceiling. These come from States as distant as New Jersey and Montana. A number of cellars of these warehouses are filled with ripening bananas from Cuba and pineapples from Porto Rico. Fruit from California and Florida is the chief stock of other warehouses. Some of them deal exclusively in citrus fruits and have in August boxes and barrels of grapefruit and oranges from California. At other times in the year these fruits come from Florida, the West Indies, and Central America.

Many of the warehouses handle only fresh vegetables. These come from the truck farms around Chicago and throughout the Mississippi Valley. For example, tomatoes are brought early in the spring from Mississippi, and as the season advances the supply comes from States farther north. The dealers say that they can regulate their trade throughout the year because they know from experience that the season travels northward at the rate of about 15 miles a day. It begins in January in Florida and moves north along the Gulf coast through Georgia, Alabama, into Mississippi and Texas, and then advances northward through the Mississippi

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4. Is there any part of a city's food that the city itself does produce?

5. Why has the war led us to think about this matter more than before?

6. What efforts have been made to interest school children in producing food?

7. Is it as important to save food as it is to produce food? What are some of the ways in which food can be saved?

8. How do the people of the city help to satisfy the wants of the various people who send them food?

River States. In like fashion in the autumn it moves southward from Maine. The wide territory from which Chicago draws these perishable products makes it possible for the people of the city to have fresh summer vegetables at all seasons of the year.

In the basements of some of the warehouses there are devices for keeping vegetables fresh and for improving the condition of those which have been injured during their travels. These are shallow tanks of cold running water, which during the spring are used to rejuvenate asparagus from California or spinach from Texas or lettuce from Mississippi.

STORAGE WAREHOUSES.

Most of the produce which we find on the market that we have been visiting will be wasted if it is not used immediately after its arrival. Some of it can be carried for a limited time if taken to near-by cold-storage warehouses and placed in rooms cooled to a temperature of about 40°. These warehouses serve also as the great food depositories, where the heavy production of one season can be carried over to supply later needs. For example, apples and potatoes produced in great quantities in the fall are stored here for use during the winter months.

DAIRY PRODUCTS, POULTRY, EGGS, FISH, AND MEATS.

The cold-storage warehouse serves a highly important purpose in the life of the city. Such products as cheese, butter, poultry, and eggs can be kept in storage for a long time. Large quantities of fish and meat are also kept in these warehouses. It is most important that dairy products should be collected in the seasons when they are abundant, in order to be carried forward through the year. For example, the number of eggs produced in April, May, and June, and the quantities of butter in June, July, and August, are much more than the amounts consumed. On the other hand, during the fall and winter months the fresh

9. Mention some of the means by which food is brought to your house other than by way of the railroad.

10. There are large farms which raise nothing but wheat. Could this have happened if we had not had railways?

11. Would it be possible to feed a city without railways? Have railways caused the population of cities to be very dense by making it possible to get food to a dense population, or have they caused the population of cities to be scattered by making it possible for people to get to their daily work from large distances?

supply of these two important foods is far less than the amounts needed. The eggs are stored in rooms at a temperature of about 32°, but this temperature must not go low enough to freeze them. They freeze at a temperature of 29°. The butter, on the other hand, is usually frozen when it is stored, and kept in that condition until it is withdrawn. One storage warehouseman, however, described butter as a very accommodating guest. It can be kept at varying temperatures and can be taken out of the coldest rooms if the space is demanded for more perishable foods.

Poultry is also stored for definite seasonal reasons. Spring chickens reach the broiling age in July and August; hence it is usual to put away "spring fries" in large quantities so that the market may furnish this delicacy during the rest of the year. Roasting chickens go into storage in November and December because the farmer wants to conserve his chicken food during the winter. Fowls and turkeys are stored in large quantities during December and January.

People are often prejudiced about the food which has been in cold storage. There is danger that it will deteriorate if kept there too long. Laws have been passed regulating the length of time that various kinds of food may be stored and otherwise restricting the use of storage.

When cold storage is properly used it is of great benefit to the people. It equalizes the supply from season to season and also tends to equalize the price. It is a necessity in a great city, which must always have on hand a varied food supply in large quantities.

PEOPLE EMPLOYED BY THE MARKET.

The markets which we have been describing and the cold-storage warehouses connected with them would not be possible without the labor of a great number of people, some of whom are concerned with the distribution of produce to the consumer, some

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12. Experts have had to study the effects of transportation on vegetables and fruits and have evolved hardy varieties which keep well and stand handling. Can you think of other ways in which trained specialists have helped solve the food problems of cities?

13. Do you know any examples in modern history where military operations have forced a city to surrender because of hunger?

14. How long do you think a modern city could live if no food were brought in from without?

15. Is it as easy in military operations to starve out a nation as a city?

with bringing the produce into the city, others with securing it at the points where it is produced. And we must not forget the fact that the market is ultimately dependent on the producer who raises all of its different commodities.

It is not possible to go into all the intricacies of the system of trade which has been developed in the modern produce market. Some of the main lines of division may, however, be traced, and from this outline sketch we shall gain a general idea of the way in which many people cooperate in feeding a city.

The man who comes into the most direct contact with the producer is the "buyer." At times he can be dispensed with because the producers organize themselves into cooperative groups and sell their own produce. The buyer is a traveling member of the trade sent out by some particular firm to make purchases. He goes through a producing territory, making contracts with producers for the whole or a stated portion of their output, or buying from day to day wherever he can secure goods at satisfactory prices. He keeps in close touch with his employer, advising him by letter, telegraph, or telephone of the condition of the field and the outlook as to quantity, quality, prices demanded, and amount and character of competition from other buyers. In turn he is advised about the demand at the market and instructed as to how much to buy and what to pay. The buyer turns his purchases over to the transportation companies, who in turn deliver them to the market which we visited.

Goods may arrive at the city market under other conditions. Sometimes the producer ships his products to a commission merchant, who sells them for him. Sometimes selling associations of the producers send their products to their own representatives on the market. Producers in remote regions sometimes combine their shipments and send them in carload and train-load lots to the large cities, where they are sold at public auction. The auction sales generally take place at railroad freight yards or at steamship piers. The commodities sold by auction are usually limited to the citrus

16. Is it of any concern to you if there is a poor rice crop in China? Or a poor coffee crop in Java?

17. What is a wholesale market? A retail market? An importers' market? A tea market? Is a grocery store a market?

18. How many different States or countries have furnished supplies for your meals to-day?

19. Would a railway strike affect the problem of feeding a city? Would a teamsters' strike?

fruits from California, Florida, and foreign countries, and the deciduous fruits, such as cherries, grapes, plums, peaches, apples, and other fruits from the West and Northwest. Some foreign shipments of bananas, pineapples, and nuts are also sold at auction. Goods from these auction sales are resold in the market.

When the goods reach the market they are handled by a number of different kinds of traders. The most familiar type is the retailer, whom everybody knows, because it is he who supplies the family with the small quantities needed from time to time.

THE WHOLESALE GROCER.

A consideration of the market supply is not complete without a view of the part played by the wholesale grocer. He deals in commodities of a less perishable nature. He also, like the market merchant, goes out into the productive areas of the country and even into those of far-distant countries. He imports tea from Japan and China. From Brazil, Colombia, Java, and Arabia he brings in the billion or more pounds of coffee used in the United States. We may stop to remark that of this billion pounds the city of Chicago uses $13,000,000 worth a year. He gets cane sugar from the West Indies, Hawaii, and the Tropics. The olive groves of Spain and Italy, the melon patches of Egypt and Hawaii, the terraced rice-fields of China, the date palms of Persia, and the currant vineyards of Greece supplement the food products gathered from the farms, orchards, pastures, lakes, and streams of our own country.

Much of this material, after it comes to the wholesale grocer, must be specially prepared before it is ready to be put into the hands of the retailer. For this purpose special machinery is used, such as large mills for grinding spices, machines for cleaning the coffee, and ovens for roasting it, automatic carrying belts for bringing the coffee from the floor where it is parched down to the floor where it is put into packages that meet the requirements

20. Why should not the people of cities produce a greater proportion than they now do of the food they consume?

21. Some people say that you can get better fruit and vegetables in the city than you can in the country. Can you give any reasons why?

22. Fruit is said to be standardized for the market. What is the meaning of this statement? What evidences do you see of standardization in the markets that you know?

23. Make as long a list as you can of the ways in which society regulates the food supply of a city.

of the retail trade. Olives arrive in large hogsheads. The olives are carefully washed and bottled in brine, or the stones are removed and the olive filled with pimentoes that come usually from Mexico. Raisins come in huge boxes or bags and contain much of the dust of travel. They are first placed in a hot room, where the surface of the raisins is thoroughly dried. Next they are placed over a sieve that automatically shakes them backward and forward, removing the dust, dirt, and sand. From this machine they are run through two or three tepid baths, and after leaving the last tank they are passed slowly over wire with different-sized meshes, where the small raisins fall through first and the larger ones of different grades are sent along a carrying belt to the girls who put them into the packages which we buy at the retailer's. Brazilian nuts come in a very rough condition. They are passed slowly through rotating cylinders which polish them. As they pass out of the polishing machines they are graded into different sizes, as the raisins were. Other nuts are treated in a similar manner. In some cases, as with the almonds and walnuts, the shells are removed and the meats are sometimes salted. Formerly much of this was done by hand, but in the modern wholesale establishment machinery makes possible the handling of great quantities of all these commodities by thoroughly hygenic methods.

THE MEANING OF THE MARKET.

Again and again, in this course, the fact will be emphasized that we live in a world where everything is at our door; where the ends of the earth meet on our dining tables because men cooperate in supplying one another's wants.

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Chapter II.

PRODUCTION AND WISE CONSUMPTION.

The lessons in this chapter emphasize the fact that careful use is equally as important as production. Waste is a far-reaching evil, not measured alone by the value of the goods wasted. It is often difficult to detect evidences of waste and it sometimes happens that men are guilty without knowing it of prodigality which works injury to their children and their children's children.

The farmer who impoverishes his soil by taking from it more than he puts back makes it necessary for those who come after him to work harder to raise smaller crops; and even those who do not live actually upon the land are injured by its lack of fertility, for it is harder for them to obtain food and clothing. If the fields of the East were now as productive as the new soil of the West, there would be no serious food shortage, notwithstanding the war. Modern science has done much in restoring poor land and in conserving good soil.

Waste has frequently resulted from ignorance of the value of the thing wasted or from a lack of knowledge of how to utilize it. In the past, cotton seed was thrown into streams as refuse, or allowed to rot in great heaps near the gins throughout the South; now it is made to yield valuable oil for human consumption and an excellent food for cattle. Immense piles of fine coal, or "slack," formerly accumulated at coal mines and it was a serious problem how to dispose of it, for it was considered worthless; ways have since been found to utilize all of it, and it is now in such demand that sometimes it actually brings a higher price than lump coal. Many such instances might be mentioned. The most remarkable is that of coal tar, which is described in Lesson B–6.

The human body offers a striking example of the need of care in supplying the proper materials in the proper quantity, in order to avoid waste in health and strength and waste in materials. We know now that many diseases whose origin was long obscure are caused by the lack of certain elements in the food. The body demands nourishment in sufficient quantity and in such variety as will furnish all the elements which are essential to growth and repair.

If wise use is required for the material things of this earth, it is required all the more for the efforts of men. The highest welfare of mankind demands the effective cooperation of all its individual units. Misdirected labor is waste of the most serious kind.

LESSON B–5. SAVING THE SOIL.

By E. R. Downing,

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If a man has wealth in the form of money and uses it up recklessly, everybody can see that he is wasteful. If a man cuts trees in the forest and never plants others to grow and take the places of those he has used, everybody can see that he will shortly be at the end of his lumber supply. But a farmer can use up the soil on his farm and people will not see what is happening.

The soil is taken up by the roots of a plant little by little. When ripe fruit is carted away from the farm or when a load of hay is

carried away from the meadow, most people do not understand that the soil is used up. The fact is, however, that every crop that grows in the fields uses up soil just as human beings use up food, and the farm will become poorer every year unless something is done to protect and restore the soil.

A SEED TAKES FOOD FROM THE SOIL.

How much is taken out of soil by growing crops will be better understood if we think of the difference between a seed and the plant that grows from it. Think what a small seed grows into a great head of cabbage. A wheat plant weighs about 2 ounces; the kernel of wheat from which it came weighs less than a thousandth as much. It takes about a fourth of a bushel of corn to plant an acre. Last year 25 bushels an acre were harvested from such plantings. This means an increase of a hundredfold in corn kernels alone, to say nothing of stalks.

To be sure only a part of the plant comes from the soil. The air and the rainfall contribute the rest, but every cornstalk and every wheat plant takes some of the soil, and unless the farmer is very careful to put back in some form what he has borrowed his fields will soon grow less and less productive, because the soil will be poor in those elements or parts which have been taken up for food by the crops.

HOW NATURE CONSERVES THE SOIL.

When plants are growing wild in nature the soil is kept rich because each season's growth stays where it is formed. The vegetation rots and is added to the earth again to enrich it.

1. The words "reclamation" and "conservation" are used in describing the efforts that are made to enforce the proper use of natural resources such as lumber, soil, etc. Can you describe forms of conservation other than those mentioned?

2. In addition to taking care of the soil, man frequently has to conserve water and sunshine. Describe the methods by which he does this.

3. How thick is the layer of soil from which plants derive their food?

4. It is said that the fields of northern France have been ruined by the bombardments that have been carried on by the fighting armies. Explain this statement in connection with the answer to the last question.

5. Find out the amount of material that enters into various crops, for example, the hay, potato, fruit, or tobacco crops, or any other crop that is common in your neighborhood so that you can find out about it.

In the forest the leaves fall each year to form a carpet that slowly decays and mingles with the soil. The soil thus becomes richer each year with vegetable matter, or "humus," as it is called. The same thing happens on the prairies, only there the plants that make the annual layer of decaying matter are grasses and flowering herbs.

The humus that has accumulated during long ages in forests and on prairies makes a soil which is especially rich, because plants draw a part of their nourishment out of the air, and when they rot to form a part of the soil they put into it what they have taken out of the air. New land, or land which has not been cultivated by man, yields more than soil which has been used for crops year after year without being repaid for what is taken out of it.

In 1915 Pennsylvania farmers produced a little over 18 bushels of winter wheat on each acre planted to this crop, while farms in the State of Washington produced nearly 28 bushels per acre. South Carolina averaged 19 bushels of oats to the acre, Montana 52 bushels. The best average yield per acre of wheat, oats, barley, rye, rice, hay, cotton, and potatoes all occur on the new lands of the States west of the Mississippi.

MIGRATION AND NEW LANDS.

The fact that new land is more productive explains why people have migrated from their homes and have pushed their way into new regions where larger crops could be gathered from the rich soil. The American frontiersman, for example, when he traveled into the prairies with his schooner and took up a claim in what is now Iowa or Kansas or some farther western State was seeking new and fertile soil. Many New England farms have been abandoned because the soil is worn out.

These facts from the history of our country are especially interesting at this time, because most of the new land is now occu-

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1. Show from the history of our country that new lands have been easily accessible until recent times.

2. Settlers who go to new lands, though they find rich soil, encounter many difficulties before they can take full advantage of the rich soil. What are these difficulties?

3. The United States has been described as a nation whose exports are almost entirely raw materials. Explain this statement in connection with the discussion of the text.

pied. There is very little possibility of any large migrations to rich unoccupied territories. We are beginning to learn the lesson which older nations learned long ago. This lesson is put into a single sentence by the experts in agriculture. They say we must begin intensive farming. This means that we must keep the soil in good condition by watching it and restoring it every time we take out a crop. We can not spread over any more new territory and carry on extensive farming; we must apply better methods of cultivation and fertilization to the limited supply of land which we have.

THE SUBSTANCES NEEDED FOR PLANT FOOD.

There are eight or nine simple substances, or "elements," as they are called, which the ordinary crop must have for its food. Some of these are minerals which must come from the crumbled rock which makes the soil. Iron is such a mineral element; it helps to make the green coloring matter without which most plants could not grow at all. Silica and potassium are other such elements. The former serves chiefly to strengthen the stems of plants, as the stalks of oats. If a plant is burned the ash which is left behind is made up of iron and like substances.

Plant food is drawn in part from the air as well as from the soil. One substance which is taken into plants directly from the

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1. Certain nations have learned better than the American nation to protect their soils. Is this due to superior intelligence on the part of other nations?

2. The Chinamen are said to make long journeys and to collect by hand seaweed and other vegetation which they work into the soil of their highly cultivated small plots of ground. How did they probably learn the advantages of doing this?

3. Describe some of the reasons why rocks crumble to make the soil.

4. Different parts of the country have soils of different colors. What does this show?

5. What effect on the crops of a given part of the country does the character of the soil have?

6. The text does not mention water as a part of a plant's food. How can you prove that a plant uses a great deal of water?

7. Certain plants will not grow in the neighborhood of factories and smelters. Why is this so?

8. How is charcoal manufactured?

air is carbon. Carbon is absorbed by the leaves of the plant in the form of a gas known as carbon dioxide. It contributes very largely to the bulk of the plant. When wood is partly burned the black charcoal left behind is in large part carbon.

NITROGEN AS A PLANT FOOD.

There is another substance in the air which is important as a plant food, but it gets into most plants by a very roundabout route. This substance is nitrogen.

Nitrogen can not be absorbed by the leaves of a plant as carbon can. Nature has, therefore, put into the soil the nitrogen which ordinary plants must have. The common soils of the country contain about a ton and a half of this necessary nitrogen in the top 7 inches of each acre, that is, in the layer which is turned by the plow and in which most of the plant roots lie. The poorer soils, as for example those in some parts of the State of Illinois, hold only about 1,200 pounds to the acre. The average corn yield of last year, which amounted to 36 bushels to the acre, took out 50 pounds of nitrogen from each acre. A poor soil would soon have no nitrogen left at this rate and even a good soil could not produce yearly corn crops very long unless nitrogen were added to the soil.

One way by which man restores a soil from which plants have taken the nitrogen is to spread over the field some of the nitrate brought from Chile. This, as was shown at length in an earlier lesson, is done on a large scale in the United States and also in other parts of the world.

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1. How does one find out about the elements that are in the soil?

2. Suppose that a farmer who has land with very little nitrogen in it encounters difficulties in raising his crops but does not know the reason for his difficulties. What advice would you give him?

3. In deciding whether or not to buy nitrate fertilizer for his soil the farmer ought to be able to determine whether he gets a sufficient additional return from his crops to justify the outlay. This means that he must keep some kind of accounts. What are the difficulties that the farmer meets in trying to keep his accounts that are different from those which concern the merchant?

4. Would it be advantageous for farmers to cooperate with each other in the study of soils?

5. Numerous farm journals are published and widely read. Show that these are in reality a form of cooperation among farmers.

The question that must have come to mind from reading the last two paragraphs is: What does nature do to restore soil when man is not wise enough to fertilize it artificially with nitrates? The answer to this question is one of the important modern discoveries of science. This discovery has done much to change our methods of agriculture and it gives us the reason for many of the practices which farmers happened to learn before there was a science of agriculture.

BACTERIA AND SOIL.

While most plants can not absorb directly the nitrogen of the air, some of the simple plants, called bacteria, can. These are plants which are so small that they can be seen only with a powerful microscope. They are found in the soil in countless numbers. They feed on nitrogen and make it into a part of the solid substance which composes their bodies. Soils that are poor in nitrogen improve just by lying idle, or "resting," as the farmers call it, because these nitrogen-fixing plants are present. They live in especially large numbers on the roots of plants that belong to the pea family, such as alfalfa, beans, clover, and vetch. These "legumes," as members of the pea family are called, are therefore good to plant on worn-out soils, for not only do the bacteria take from the air all the nitrogen food needed by the legume, but they produce a surplus which is left in the soil. It is possible to raise a crop of clover or soy beans and have the ground richer after the crop is taken off than it was before.

Often the farmer plows the legume under as green manure, thus adding to the soil not only much nitrogen but quantities of other valuable plant food and humus to make it lighter. This practice is very good after a field has produced a crop which uses much nitrogen. For the reasons given, clover, which is a nitrogen yielding plant, may be planted after wheat is harvested. There

1. What other services do bacteria render to man? Mention also certain disservices which bacteria render.

2. Earthworms are helpful in preparing the soil for cultivation. In what way do they help?

3. Does a farmer need any education beyond what he would get in the sixth grade?

4. When farmers want to "rest" their land they very frequently turn it into pastures. Why does this improve it for later tilling?

5. Mention some other forms of crop rotation that are desirable.

is time enough in the fall for the clover to get a good growth before frosts come. By late spring or early summer of the next year it yields a crop of hay. It grows up again after cutting, blossoms, and later the seed is harvested. Cattle may still browse on it for some days before it is plowed under in the late fall. A year of clover will thus produce profit from the clover itself and in addition will make the soil ready to take another planting of wheat or some other crop that needs much nitrogen. Such a change from a crop which takes material from the soil to one which renews it is called crop rotation.

CROP ROTATION.

The wise farmer divides his farm into a number of fields, and each year changes the crop which he raises in any one field. If he raises wheat in one place this year, he will raise clover there the year following. The division of the farm into fields makes it possible to produce each year some wheat, some clover, and so on through the list of crops that are wanted. In this way the farmer brings nature to his aid in natural fertilization of his land.

There are other advantages which come from rotation. A change in crops often helps to kill weeds. Many weeds that creep in where cotton is growing, for example, will be killed by planting corn in the field. Insect pests are also often destroyed by a change in the crop. There is an advantage, also, in putting into the field at one time a crop which sends its roots deep into the soil and uses the lower layers, and at other times a crop which has only surface roots.

THE SCIENTIFIC STUDY OF SOILS.

In addition to the knowledge which the scientific study of soil has brought to light about nitrogen, there are other facts which have been learned by analyzing fertilizers and by making experiments with the raising of crops.

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1. Find out from a store where fertilizers are sold something about the different varieties that are to be had.

2. Draw a plan of a small farm and make plans for the rotation of crops through a period of years.

3. A "balanced" farm is one which raises both cattle and crops. What is meant by the statement that such a farm is balanced?

4. What other forms of scientific study does the Government undertake besides studies of agriculture?

The most valuable single fertilizer and the one most widely used is barnyard manure. It contains much nitrogen, enough potassium and phosphorus for most soils, and so much humus that it improves the texture of the soil to which it is added.

THE GOVERNMENT STUDIES SOILS.

It is so important for the life of any nation that its soil shall be conserved and made to produce as much food as possible that the Government takes a hand in the matter. Some people think of the Government as a power which devotes all its strength to passing laws and enforcing them, or to raising armies and settling matters of international dispute. The fact is that the Government, representing all the people, is the center of the conservation movement. It is awake to the necessity of saving the lumber and the coal and the water power.

The Government of the United States, through its Department of Agriculture and through the State colleges of agriculture, has given a great deal of attention to the matter of selecting fertilizers, to crop rotation, and the study of soils. Extensive experiments have been made in different parts of the country and the results are printed in reports which any citizen may readily secure. In this way the Government has helped to make a science of agriculture and to give its results to people who can profit from them.

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LESSON B–6. MAKING DYES FROM COAL TAR.[1]

When illuminating gas is made from soft coal, there is given off a black pitchy substance known as coal tar. For many years this tar was regarded as a nuisance and was thrown away. To be quite exact, we may say that from about 1820, when the great cities of the world began to use gas, up to 1845, when scientists first studied coal tar, this thick, dark liquid was nothing but a waste product. It was poured into rivers and lakes and was there left to be disposed of by nature.

SCIENCE DISCOVERS THE USE OF COAL TAR.

In 1845 a scientist by the name of Von Hofmann found that he could separate coal tar into a number of different substances by the process of distillation. When he heated the tar in a closed vessel, a number of vapors were given off at different stages in the heating process. He found that these vapors could be condensed and that each one produced a different substance. We now know 10 such substances or coal-tar "crudes," as they are called.

From the crudes are manufactured a great many valuable and useful articles. A number of medicines are derived from coal tar, such as aspirin and salvarsan. Some of the flavoring substances, such as essence of wintergreen, are produced from coal tar; when pure, they are the same as the extracts which are derived from the plants after which they are named. Saccharin, which is 500 times sweeter than sugar, is also a coal-tar product.

Nothing, however which is produced from coal tar furnishes a more striking contrast to the dark pitchy mass than the brilliant dyes which are manufactured from it and are used in all kinds of commercial processes. Most of our writing inks and all the colored inks of the printer are derived from coal tar. The colors used in dyeing cloth and feathers and leather, the paints used by artists and painters, are nearly all made from coal-tar dyes.

The coal-tar dye industry began in 1854 when an Englishman by the name of Perkin, a student of Von Hofmann, commenced to make in commercial quantities a violet coloring matter which he had discovered. Since that time the production of dyes has gone

[1] The material for this lesson was supplied by Mr. W. R. Macklind, of the Sherwin-Williams Co.

The lesson shows how material regarded as waste may have within it possibilities of great usefulness to man. It also shows something of the importance of science to man in his efforts to make use of what nature provides.

forward rapidly until to-day there are a thousand different colors made, the methods of making which are publicly known. Another thousand are made by processes which are secret. Some of the dyes made by secret processes are very expensive and are greatly sought by the trade. The discovery of new shades is encouraged by the high prices paid, and makers vie with each other in producing new and striking colors.

WHAT COAL-TAR DYES HAVE CONTRIBUTED.

Before we take up the making of dyes, let us try to imagine how different our present-day world would be if we did not have them. Before 1856 people depended for coloring matter on certain plants which they boiled. Indigo was one of the most attractive of the vegetable dyes. It came from India and was imported at first as an expensive luxury. Afterwards it was cultivated in all parts of the world. Other dyes were derived from native plants like the oak and the sumac. Most of the vegetable dyes lacked, however, the brilliancy of coal-tar colors, and there were only a limited number of shades which could be produced. To-day there is no limit to the number and brilliancy of colors that can be made.

It is an impressive lesson that all these modern dyes are taken from a substance which was once thrown away. Science has transformed an ugly waste into an array of bright and useful colors that attract and please the eye of man and contribute to the beauty of his surroundings.

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1. What kind of coal is used in manufacturing illuminating gas? What is the method of manufacture?

2. Describe what happens in distillation.

3. Are there other cases in which substances once wasted are now used?

4. Coal tar is called a by-product of gas. What is a by-product? Find examples other than tar.

5. Why do manufacturers have secret processes? What factories other than dye factories have secret processes?

6. What things about you are artificially colored?

7. Is it right to color foods?

8. The history of coal tar is paralleled by the history of petroleum, which has been found to yield many valuable materials which were at first wasted. Find out about the products of petroleum.

9. The value of dyes because of their beauty raises the general question of the commercial values which are added to things because they are attractive in appearance. Give examples.

SYNTHETIC DYES.

The dyes made from coal tar are called synthetic dyes. This means that they are made by synthesizing, or putting together under proper conditions, substances which unite and produce a new chemical compound. The best example of synthesis is exhibited by nature in the growth of a plant. The roots take up elements from the coarse dark soil and the plant combines these elements with others drawn from air and water, and under the influence of sunlight synthesizes all into the green leaves and colored blossoms.

ARTIFICIAL SYNTHESIS.

The synthesizing of substances by plants is imitated in some measure in the dye factory. As a visitor goes into such a factory he is shown a great retort or closed vessel in which one of the coal-tar crudes is being mixed with sulphuric acid. Inside the retort are rotating paddles or agitators as they are called. The retort and its contents are raised to a high temperature, for heat helps to bring about the chemical change desired in the mixture. This high temperature can be compared to sunlight acting on a plant. Sometimes the heat necessary for the artificial synthesis is so great that it can not be produced by ordinary means; then coils of pipe containing superheated oil pass through the walls of the retort.

Sometimes the synthesizing is of a very different type. A strong nitric acid, for example, is slowly poured into a retort containing a coal-tar product. The temperature is kept very low by means of a freezing mixture, which passes through the coils of pipe in the walls of the retort. Agitators keep the mixture in constant motion. If the temperature begins to rise, it means that the acid is coming in too rapidly or that it is acting too vigorously, and the operator shuts it off. If the temperature still continues to rise, the operator knows that an explosion is coming and he leaves.

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1. Look up the word "synthesis" and find out what it means more than merely putting things together in a mixture.

2. Why should agitators be required to help in making dyes? Can you think of processes in the kitchen where something of the same kind is required?

3. Why does oil carry a higher temperature than water?

4. What are some of the freezing mixtures used in manufacturing processes?

The comparison of these processes with those which occur in a plant will be recognized as quite legitimate when it is remembered that the coal tar on which all this manufacturing of colors depends is indeed a result of plant growth. Back in the carboniferous age when coal deposits were formed the luxurious plant life built up the substances which we now get from coal. These substances are therefore plant products. What our dye manufacturers have learned to do is to work over these plant products of a long-past age and bring out their brilliant possibilities.

THE COMPLEXITIES OF DYE MAKING.

Mixing some coal-tar products in hot chambers and others in cold chambers gives only a partial idea of the complexity of the methods that must be adopted in making a dye. The visitor to a dye factory is shown room after room where all kinds of treatments for the various substances are provided. Sometimes the material is mixed with lime or with caustic soda and drawn off in solid form. Then it has to be pressed and dried. Again, it is dissolved in water. Sometimes it is put through a vacuum or a centrifuge in order to drive off the water. Sometimes it appears as a liquid and in the next process it becomes a solid.

Each time the material passes through one of these processes it undergoes an inner chemical change. Each process is called a stage or step toward the making of the dye. Some of the simplest dyes require 25 stages, while the more complicated ones require a hundred or more. Usually the product of these partial processes has no resemblance whatever to the finished dye.

In many of the processes time is an element. It takes five hours, for example, for sulphuric acid to mix thoroughly with one of the coal-tar products known as napthalene. The process must be conducted at a temperature of 160° C. and under 3,000 pounds pressure.

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1. Describe the formation of coal.

2. Where does lime come from?

3. What is a chemical change? Can you find some examples of simple changes of this kind?

4. How much is 160° C. in terms of the ordinary thermometer.

5. Several references have been made to the expensiveness of dyes. Show how the following items contribute to this expensiveness: Time required, number of steps or stages, demand for exactness in each stage, pressure, temperature conditions.

THE PROCESSES OF MANUFACTURE MUST BE EXACT.

The inner chemical changes produced under conditions like these must be carried to completion with the highest degree of exactness or the dye will not be perfect. When one considers the number of different steps through which a single dye must pass, one understands why dyes are so expensive. If one of the steps is not allowed time for completion or if improper quantities of the various substances are put together, the result will be an imperfect dye.

A perfect dye is one which is pure and complete in all the stages through which it passes. The expert knows a perfect dye by two qualities. First, it is always the same in shade; second, it is a fast color, that is, it will not fade.

The importance of having a constant dye may be readily understood when it is remembered that many commercial uses of dyes are absolutely dependent on the ability of the user to match his dyes. The lithographer, for example, wants to be sure as he prints with colored inks that his ink will be the same hour after hour and day after day.

The fast color is one which is so pure and so settled in its inner composition that it does not undergo any chemical change when light falls on it. If, on the other hand, a color fades when exposed to the light, it is known to be impure or unstable in its chemical composition.

HOW SURFACES GET COLOR.

When the dye is finished, it is applied to cloth or leather or wall paper, or it is used in manufacturing pigments for paint. Our explanation of color is, however, not complete until we find out how it is that a dye affects the eye so as to give us an experience of red or green or blue.

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1. Can you think of other manufacturing processes which depend on the purity of the substances used for their success?

2. What other examples can you supply of the need of close matches in colors?

3. What effects of the war on dyes have you observed?

4. Many of the effects of light on substances are used in photography. These also are chemical processes. What can you find out about them?

5. Paint is not made directly from dyes. Find out about the manufacture of paints.

6. How is color applied to leather? How is cloth dyed?

If we stand before a painting in the dark we get no sensations of color from the painting. Color is produced by light which is given out to the eye by a colored surface. Daylight has in it all the colors. When daylight falls on a given surface a part of this light is taken up or absorbed by the surface; a part is thrown out, or reflected, and enters the eye of the observer. A red rose is red because the rose takes up the green and blue and violet rays that are in daylight and sends out the red. The grass is green because it takes up all the red rays in daylight and sends out the green.

A dye is a substance which takes up a part of the daylight and sends back the rest. A blue dye, for example, takes up or absorbs all the red and yellow and reflects the blues, and so on through the long list of different dyes. If the dye is such that it undergoes no change in absorbing and reflecting light, we say that the color is fast. If the dye is changed by the light which it absorbs, the result is usually undesirable because the color becomes paler and less beautiful. There are a few dyes which seem to have the property of becoming softer and mellower with age and exposure to the light.

LEARNING THE ART OF DYE MAKING.

America is just beginning to learn the art of making dyes. Before the war the Germans made most of the dyes used in this country. They were able to hold the trade because of their superior knowledge of the intricate processes through which the dyes have to pass. By long experience and careful study they have perfected the steps of making each dye. They have learned how to make each partial product again and again in exactly the same way. Many families are expert dye makers. They hand down from father to son the traditions of one single step in the process and are satisfied to specialize on this one step.

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1. What effect does sunlight have on the human skin? What does this show about the absorption of light?

2. How many primary colors are there in sunlight or ordinary daylight? How do we know that these colors are in daylight?

3. There are a great many experiments one can try with colored surfaces and with colored glass. Put together a pane of blue glass and a pane of yellow glass and let the light pass through both. What color results? Why? Now spin a colored top with blue and yellow surfaces and note that the result is entirely different. Why?

4. Why is America behind Germany in the matter of making dyes?

The war has set Americans experimenting. With many a blunder which results in dyes that fade, our manufacturers are learning to do their work. Every dye factory has a special chemical laboratory where experts are constantly at work. If a dye goes wrong in the making, they must find the difficulty. If a customer wants a special shade, they try to find a formula for making it. In the meantime they are experimenting all the time with a view to finding shorter and surer methods of carrying on the processes of the factory.

THE GROWTH OF THE AMERICAN INDUSTRY.

In 1913 the United States imported more than $7,000,000 of dyes and exported about a third of a million of dollars' worth. During the year ending June 30, 1915, the tide turned. Last year we exported more than $11,000,000 worth and imported less than half as much as in 1913. In using these figures we must remember that the price of dyes has risen greatly, so that the production in pounds has not risen to the extent indicated by these figures.

Importations from Germany have, of course, ceased. The other countries that manufacture dyes on a large scale are Switzerland and England. A few manufactories exist in Holland, Belgium, and France.

DYES AND EXPLOSIVES.

One interesting fact with regard to dyes is that their manufacture is very closely related to the making of the highest explosives known to man. These explosives are also made from coal-tar products and by processes which are in part identical with those used in making dyes. It will be remembered that comment was made in an earlier paragraph on the fact that

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1. What other examples can you find of scientific laboratories which are parts of manufacturing establishments?

2. What other readjustments in American exports and imports followed the outbreak of the war?

3. How does a tariff affect industry?

4. One hears much about the probable relations between countries which will follow the war. What are some of the important conditions that influence international trade? How are they likely to operate after the war?

5. Among the references given at the end of this lesson are many Government bulletins. Why should our Government take up a matter of this kind?

certain of the stages of dye making are dangerous because they are likely to result, unless closely watched, in explosions.

Germany's interest in coal-tar dyes was closely related to her interest in explosives. At the beginning of the war, with her usual ability to adapt means to ends, she turned her dye factories which had been supplying the world, into factories for the production of explosives.

CAN AMERICAN MANUFACTURERS COMPETE AFTER THE WAR?

What will come after the war is difficult to say. American factories are now beginning to make dyes on a large scale. It is said that more than $200,000,000 have been invested within the last two years and a half in plants for the manufacture of dyes, and other chemicals from coal-tar products. Some of the manufacturers are asking that their business be protected after the war by a high tariff. Others are preparing by the perfection of their processes to compete with manufacturers in other parts of the world.

Our manufacturers have been led by their efforts to make dyes to understand as never before the desirability of using coal tar and all its products. They are learning also to value science, which must be called in to guide all the processes of the factory. It is common for dye factories to employ workers who have had the highest education that our universities and technical schools can give. It is through the fuller development of science in this industry that our manufacturers will ultimately be able to carry on the industry in such a way as to make it profitable in spite of competition.

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LESSON B–7[1]. AN INTELLIGENTLY SELECTED DIET.

There is a sawmill in northern Michigan which had a contract last winter to supply furniture manufacturers in the southern part of the State with 50,000 feet of lumber a day. Arrangements had been made for cutting and hauling the logs and for shipping the lumber. The saws were ready to do their work, and the workmen at the mill were thoroughly competent, experienced men. The company had set up some fine new engines, and all seemed very promising. There was just one difficulty. The company could not get the coal for which they had contracted. They had made arrangements in the fall for a high grade of coal from the mines of Indiana, but because of troubles at the mines the coal that came through was of a poor grade, full of slack and shale. The engineers were using this poor coal as best they could and were mixing with it some wood and sawdust, but the mill which would have put out 60,000 feet of lumber a day if it had good coal was running behind its contracts. The saws did not have power enough.

UNSUITABLE DIET MEANS LOW LEVEL OF BODILY LIFE.

It is easy enough for anyone to understand the difficulties of that sawmill. There is another case which is very common and of exactly the same type which people do not seem to understand. In many city homes in the tenement districts the children do not have enough food. For example, they have for breakfast a piece of bread and a cup of so-called coffee. This is neither enough nor is it of the right kind. The child would be much better without the coffee, and he ought to have some fat with the bread. Milk would be better than mere fat, because milk contains nearly all of the substances which the child's body needs. Without these additions to the bread the child is like the sawmill without sufficient power.

Sometimes whole nations get into difficulties with their food. A recent investigator who has studied the inhabitants of Bengal says that these people are incapable of performing a really hard day's work. The explanation is that they live too largely on rice,

[1] Prepared by Minna C. Denton, University of Chicago.

The lesson aims to show how food should be selected in order to furnish the body with all that it requires for its life and work. The body as a machine furnishes an excellent example of the importance of the wise consumption of materials.

and rice does not supply what is needed to keep the muscles in fit condition.

FOOD AND BODILY ENERGY.

Other investigators have carefully measured the difference between the amount of energy used by clerks and farmers and by a six-day bicycle rider. They have measured the amount of energy used by a man who lies in bed all day and that used by a man who sits in a chair for 16 hours in the day. These studies give definite information with regard to the amount of material consumed by the body in different kinds of activity. The body is exactly like a very complicated engine and requires the same kind of attention to its fuel if it is to do its work.

There are other things that a steam engine needs besides fuel. It must have water. It must have lubricating oil. It wears out, and in this sense uses up the iron and steel of which its parts are made.

WATER.

The body needs in exactly the same way many different materials if it is to keep alive and do work. A person who weighs 150 pounds has in his body 100 pounds, or about 12 gallons, of water. The supply must be renewed exactly as in an engine, because water in the form of vapor is constantly given off from the lungs and skin or is taken out of the blood by the kidneys. Water is necessary, not only because it is an important part of the body, but also because its free use flushes out body wastes.

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1. No mention is made in the text of the fact that air as well as fuel is needed for both the furnace and the human body. In what way is air used up by the burning of fuel?

2. Why must the body be supplied with air, and what are the organs that make it possible for the body to use air?

3. Why should a hard-working man need more food than a small boy, and a different kind of food? What are some of the other differences between the food used by grown people and children?

4. Are there many people in this country who are less efficient than they might be because of the lack of proper food?

5. Not all engines require water for their operation. What is the difference between the steam engine and a gasoline engine?

6. Why do engines require lubricating oil?

7. When one is exercising vigorously, what evidences are there to an observer that he is using up food material more rapidly than usual?

8. What is the relation between the facts given about the amount of water in the body and man's ability to learn to swim?

Especially important to life are the materials which repair the waste of the body parts or enable them to grow larger. The muscles require for their proper upkeep certain substances called proteins, and the muscles and other parts of the body must also have mineral salts. Finally, there are other materials, sometimes called vitamines, used by the body in small quantities.

WASTE BECAUSE OF UNSUITABLE QUANTITY.

We are never satisfied with the organization of a factory or mill unless the work is done in such a way as to produce the largest possible results with the fuel consumed. We are, on the other hand, very often careless about our bodies. For example, we sometimes put into our bodies more food than is necessary We enjoy the taste of what we are eating and go on stoking the body furnace beyond its needs and sometimes even beyond its natural capacity.

It should never be forgotten that food must be disposed of in some way whenever it is taken into the body. If the supply at any given time is more than is immediately needed, the body can use a part of it advantageously by storing it for future use. There is, for example, a layer of fat under the skin which is storage material taken out of the surplus food. This fat can be taken from this storage place and used at some later time when the body is not as well nourished. There are also other storage places in the body.

It is good for the body to have a certain amount of surplus, but too much interferes with the proper action of such organs as the heart and lungs, and with the work of all the muscles.

It sometimes happens when we take in more food than the body can consume that the excess is imperfectly burned, and poisonous products accumulate and injure the body.

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1. What advantages are there in the fact that the body is able to store up some of the surplus supply of food?

2. Certain animals are able to store up a much larger supply of their surplus food than human beings. Find out about these facts.

3. Some animals and some plants are able to store up a water supply when it is abundant. Find out about these facts.

4. How long can one go without the various necessities of life, such as air, water, and food?

5. On what conditions does the selection of food depend? For example, when one is on a hunting expedition, what limitations are there to the food supply?

FUEL FOODS—FATS, SUGAR, AND STARCH.

Some foods can not be used to any great extent in building up the tissues of the body. They are valuable chiefly as fuel for keeping up the heat of the body and supplying its muscles with energy. Sugar, starch, and fats are usually looked upon as chiefly fuel foods.

It is impossible to feed the body properly on these fuel foods alone because they do not supply the elements which are essential to growth and repair. The inhabitants of Bengal mentioned in an earlier paragraph are badly nourished. One reason is that their food is too largely fuel food. The experiment has often been tried of feeding animals exclusively on a fuel diet, but the results are always disastrous. The strength of the animal diminishes, and unless the diet is changed the animal will die prematurely.

Fuel foods are subdivided into two classes, fats and the substances known as carbohydrates. Fats are supplied by both animal food and vegetable food. Some examples of the most common fats are butter, suet, tallow, lard, oilve oil, cottonseed oil, and other vegetable oils. The chief carbohydrates are sugar and starch.

PROTEINS.

The second general class of food substances is the proteins. The proteins are among the necessary elements for building up the muscles and the other tissues of the body. If we go back to our comparison with the engine, we may consider the proteins as the steel and iron out of which the engine is constructed. The steel and iron gradually waste away. In an engine it is necessary ultimately to replace the parts. In the body this process of wear and replacement is going on all the time. The proteins also have the property of being usable as fuel.

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1. Look up a list of different fats which can readily be secured as a part of the ordinary food supply?

2. What are some of the other uses made of fats besides for food?

3. Mineral oils can not be used for food, but by substituting them for animal oils and vegetable oils the food supply of the country is conserved. Give examples that will show the truth of this statement.

4. Prepare a list of the foods which are made up chiefly of carbohydrates.

5. In what foods is there a great deal of starch? Where does the pure starch used in the family come from?

6. What are the qualities of wheat other than those considered in the text which make it good food material?

The amount of protein in the body of a person weighing 150 pounds is approximately 27 pounds. The proteins may be derived from vegetable as well as from animal food. For example, such vegetables as peas and beans contain a great deal of protein. Wheat and other cereals have some protein value; corn has almost as much as wheat; oatmeal a little more. They are all moderately good sources of protein when eaten in large quantities.

Lean meat of any kind, milk, cheese, fish, eggs, beans (except string beans), and peas contain a great deal of protein. A pound of medium fat beef round contains about three ounces of proteins. An egg contains about a quarter of an ounce. A glass of milk contains about one-fifth of an ounce. A pound loaf of white bread contains one and a half ounces of protein.

There is no protein at all in sugar, in fats or oils. Butter contains practically none.

The question of how much protein a person needs every day is one that has been very much discussed by investigators of foods. It is agreed everywhere that a grown man needs at least 2 ounces a day and most authorities increase or even double this amount. In general, it is also agreed that for a growing child not less than one-third of the proteins required daily should be taken from animal foods. Milk and eggs are even better for the child than meat.

MINERAL SALTS.

A third class of foods which are required by the body, though in relatively small quantities, are the mineral salts. There are about 7 pounds of mineral salts in a body weighing 150 pounds. A large part of this salt is of the same type that we use as table salt.

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1. The statement is sometimes made that the domestication of animals was one of the longest steps ever taken in the advancement of civilization. Show how this statement applies to the food supply of a nation.

2. What are some of the indirect methods by which animals supply us with food? What else do they supply?

3. The statement is frequently made that the high prices which are paid for meat at the present time are resulting in such a destruction of the cattle of the country that the Nation will suffer later. In what ways will the Nation suffer later through the excessive slaughter of cattle and sheep?

4. Primitive man got much of his food by fishing and hunting. Which of these industries is still of importance and why has it outlasted the other?

There are, however, other minerals needed in the body, such as iron. The total amount of iron in the body is about as much as would be needed to make a very slender ring around one's finger, but it is one of the most important elements in the body. It is essential to the building of the red corpuscles in the blood. If iron is lacking, the blood can not do its work, and the person suffers from a diseased condition known as anaemia.

Most of the salts which are needed in the body are widely distributed through nature and come to us in almost all kinds of food. There are, however, none in pure sugar or pure oils. Three of the important substances of this class, which are not universally distributed and are very necessary to the body's welfare, are iron, phosphorus, and calcium. It is of the highest importance, therefore, that one's diet be so selected that it shall provide these important elements. Eggs, meat, and milk are good sources of all three, except that milk does not contain enough iron, and meat does not contain enough calcium. Legumes, and cereals if used with their bran, are good sources of all three.

VITAMINES.

A fourth class of food substances which are present in the body only in very minute quantities have recently come to be recognized as of the greatest importance. These have been called "vitamines." The amounts of these substances necessary to suffice for some days are very small, hardly more than a few specks of dust. Yet without them animals do not grow properly, and if the lack of vitamines continues strange diseases develop which are fatal to life.

Some of this material is contained in ordinary butter, but not in lard nor the substitutes for butter which are made from vegetable oils and fats. If a child is fed with butter or with one of the suitable substitutes, it grows normally and is able to use the

1. How do animals exhibit the demand of their bodies for mineral salts?

2. What are the chief sources of the salt supply in the United States?

3. Many countries have a much smaller salt supply than we have. This is especially true of some of the countries in which ancient civilizations flourished. Can you find any evidences in the Bible that the Hebrews prized salt very highly?

4. The bones of little children are soft and cartilaginous. What does this show with regard to the character of the food which they need?

5. What is the difference between whole wheat flour and ordinary white flour?

rest of its food in a healthy way. If the necessary substance is not given because the child is fed too largely on vegetables, including vegetable substitutes for butter, growth will be delayed and the whole physical life of the child will suffer.

It has been found that vitamines are sometimes destroyed in the preparation of food. For example, it is necessary to pasteurize milk in order to free it from dangerous bacteria, but the process of pasteurization may partially destroy some of the vitamines. If pasteurized milk is to be used for infants, it is often necessary to supplement the milk by giving the child orange juice, prune juice, or other foods which supply the vitamines.

A COMPLETE DIET.

Enough has been said to make it evident that the intelligent selection of a diet means the putting together of a great many different foods. The proportions in which these foods are mixed must also be right or the body will suffer because it can not dispose of those elements which are supplied in excess, and its essential parts will not be kept in repair.

AN ECONOMICAL DIET.

There is another phase of the situation which must not be overlooked. Food materials have to be selected by people under our modern conditions with due regard to the cost. Some food sub-

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1. Substitutes for butter are very frequently provided on the market. Sometimes laws have been passed restricting the distribution of such substitutes. Some of the laws are altogether unwise. What would be justification for legislation against substitutes?

2. What is the process by which milk is pasteurized?

3. Indicate some of the limitations on diet that result from the cost of food. In answering this question, distinguish between different classes of people.

4. Make out the menu for a meal which provides all the different food substances.

5. Make out another menu which may be described as an unsatisfactory meal of the sort which sometimes appears on the table.

6. The Army is employing experts to see that the food in every cantonment is of such a character as to give the men all of the different articles of diet that they need. What steps has the Government taken to provide for the proper nourishment of people not in the Army camps?

7. Is it more important that an army should be well fed than that ordinary citizens should have a proper diet?

stances are very cheap, and there is a tendency to use these, often to the undue exclusion of other forms of food which would be better for the body. The poor white people in many sections in the South live on salt fat pork, corn, and molasses. These foods are cheap and apparently gratifying to the taste, but they make up a very incomplete diet. In many city families the case is hardly better. The food consists of baker's bread and cakes, lard, fat meats, sirups, and cheap candies.

In both of these cases the diets should have in addition milk or fresh meat or eggs to supply animal proteins and vitamines. They should also have fruits or vegetables to supply mineral salts and more vitamines. Whole-wheat breads, and oatmeal and other cereals which are not too highly milled, would also be helpful.

In thinking of foods and their cost people ought to know that milk is essential in a child's diet, and very desirable in that of a grown person. It is a cheap food even at present prices.

Many cheaper cuts of meat are good sources of protein. Beef shoulder and neck, parts of the flank, the heart, and soup meats in general are just as rich in proteins as the higher-priced cuts.

The vegetable vitamines and salts which are cheapest are usually found in apples and bananas and the winter vegetables, such as cabbage, turnips, squash, carrots, and parsnips. In summer green vegetables and fresh fruits are in season, and these are especially valuable.

An adult's diet does not require as much animal fat as that of a growing child. Vegetable fats and oils can, therefore, be used to a great extent for adults. The child must have in addition either plenty of whole milk or butter or eggs.

If such facts as these are known and acted on in purchasing and using food, it is quite possible to have a complete and wholesome diet at no greater expense than some of the incomplete diets now common.

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LESSON B–8. FINDING A JOB.[1]

Whatever waste of materials there is in industry and in the home, the most serious type of waste that can be found is that which comes when human beings are out of place. If anyone, old or young, gets into a position for which he is not suited, he will interfere with the work of everybody with whom he is associated. He will be unhappy himself and he will not help the community as he might if he were in some type of work for which he is fitted.

VARIOUS KINDS OF MISFITS.

There are certain kinds of work which the community has to have done, such as digging ditches and carrying bricks, which require no training or skill. To put a trained person into one of these kinds of work is to waste all of his preparation. It would be quite as bad to put into a position requiring knowledge a person who is untrained. Sometimes a father gets his boy a position through influence and the boy is unable to hold it because of lack of preparation.

There are other cases where people do not fit well into the scheme of life of the community. There are positions open in the business world which offer to a young and untrained person wages which seem at first to be very attractive, especially in view of the person's lack of training. These positions do not in some cases lead to anything beyond in the way of an improved opportunity for work and earning. Such positions are commonly referred to as "blind-alley" jobs. If a boy, for example, becomes a messenger, he ought to ask himself whether that particular opportunity promises to give him later an opening which is better than the one with which he began. If not, the position is a "blind-alley" job. If a girl is considering whether or not she should drop out of school and go into a factory to paste labels on boxes, she ought to ask herself whether it is worth while to give up her training for the wages that she can earn; for pasting labels is not likely to offer her any opportunity for personal development

Everyone who is looking forward to entering an occupation ought to think carefully about the dangers which have been mentioned

[1] Prepared by Ernest W. Burgess, assistant professor of sociology, University of Chicago.

The lesson aims to show the importance of conserving human beings. Personal applications are suggested which should lead the student to give thoughtful consideration to the selection of his own vocation.

and ought to make his choice with the fullest knowledge of possible opportunities that he can obtain.

HOW THE PROBLEM OF CHOOSING A VOCATION AROSE.

The freedom of vocational choice of American boys and girls is so unlimited that it is hard for them to realize that only in the last century has youth become free to select occupations. In savage tribes there are only two groups of occupations. These are determined by sex. The men hunt and fight. The women sow the seed and gather the crops and prepare food for the family. A long historical process, known as specialization, has been going on, leading up to the great variety of occupations in modern life. While specialization has been leading to many types of occupations, other changes have led to a freer choice of occupations. There was a time when the worker had absolutely no choice about what he should do. The worker was in early days very commonly a slave captured in war. The conqueror became a member of the leisure class, and the slave was forced to do whatever the conqueror imposed upon him. Sometimes he became a tiller of the soil, sometimes a builder, sometimes a maker of clothes. He was provided with food and shelter by his master, but he had no liberty in selecting his occupation.

Even after slavery passed away, the freedom of choice continued to be very much restricted. It is still commonly true in the older civilizations of Europe that the son takes up his father's trade. In this country opportunity of choice has come to the individual as a part of our freer national life.

AN EXAMPLE OF POOR EMPLOYMENT.

The freedom which we have in the United States sometimes leads to unfortunate consequences. There is a story of an Italian boy of New York, told in the journal called "The Survey." The

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1. Give other examples of so-called unskilled labor and of "blind-alley" jobs.

2. Some countries have a rigid caste system. Find out how this affects industries and other phases of community life.

3. Find out how some of the older members of your family came to choose the occupations in which they are now engaged.

4. Make a list of the occupations which you would prefer and tell the advantages which you find in each of them.

5. Specialization is said to have passed through (*a*) the differentiation of occupations and (*b*) the division of labor within each occupation. Find out what these mean.

same kind of a story can be told of the industrial experience of thousands of boys.

On the last day of last January John Panello, aged 15 years and 5 months, graduated from a public grammar school in New York. On the 20th of February he got his "working papers" from the board of health. In school he had been fond of arithmetic, and from childhood had wanted to become a bookkeeper. But the classroom had become irksome to him, and his parents, financially comfortable, had just "taken it for granted" that he would go to work after graduation. He received no answer to his first application for a job—that of office boy in a place where he hoped that he might work up to a position as bookkeeper. . . . After three weeks of looking for work he got a job as errand boy for a dyeing and cleaning establishment. Five dollars a week were the wages, and tips amounted to a dollar or two extra. At the end of one week the boy who had had the job before came back and John was fired. . . . After a day's hunt he saw a sign "Boy wanted" and was taken on by a firm manufacturing ladies' hats. Here he swept the floor, ran errands, and helped to pack. At the end of two weeks . . . he left, because "a feller who had been there four years was getting only $6 a week."

Before leaving, he had been lucky enough to get a promise of a job with a millinery firm. At first his work consisted in "going for stuff to the first floor," then he ran a crimping machine, and next was detailed to "get the cord downstairs for the men who make rugs." After a week and a half of this . . . "another feller said, 'Come along and learn carpentry,'" so John got a job at loading and unloading wagons for a firm that made wooden boxes. . . . When he learned that the boss was going to move to Staten Island, he decided to quit. . . . He had been with the firm two weeks.

During the next three weeks John did five different kinds of work for a manufacturer of jewelry and notions. He was making $4.50, but when a man said, "Come along, I've got an office job for you," he quit. The "office job" consisted in acting as shipping clerk, running errands, answering the telephone, and sweeping the floor for a manufacturer of artificial flowers. He is still there, getting $5 a week. He doesn't think much of the work. "What can I learn?" he asks.

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1. By comparing the various positions held by John Panello, find out what there was about all of them which made them undesirable. Also show how much training each one required.

2. It is sometimes said that experience in the business world is the best kind of education. Was this true in the case of John? What kind of business experience is really helpful?

3. How are the wages paid for services related to the training which an individual takes into occupations?

4. "Education is an investment." Show what is meant by that.

AN UNWISE REASON FOR CHOOSING A VOCATION.

Sometimes a choice is made with more show of reason than in the case described, but the reason is not a wise one. Thus a boy or girl goes into a vocation because he is supposed to have a special talent for that kind of work, but the supposition is not well grounded in fact. A little boy from the poorer districts of a city came every free day to the Art Museum to gaze admiringly at the paintings. His unusual interest in art was brought to the attention of a group of well-to-do women. In the conviction that the boy would some day become a great artist they raised a fund to give him lessons from one of the best art teachers in Chicago. A few weeks later the art teacher reported to the women that the boy was incapable of learning even the simplest principles of drawing and was absolutely lacking in color harmony. His love for art did not mean that he had a natural aptitude for drawing and painting.

WISE METHOD OF CHOOSING.

The wise method of choosing a vocation is, first, to make a careful study of the kinds of openings that are to be found. Occupational opportunities differ with localities. In a mining district, for example, there is one set of opportunities; in a manufacturing city, a very different set.

One hardly realizes, until he takes up a study of the matter, how many different occupations there are. The index to occupations in use by the United States census now includes about 17,000 different names of different kinds of work. The report on "Occupational Statistics" for 1910 refers to 428 specific occupations or occupation groups. The chief divisions under which all these occupations are classified are as follows: Agriculture, forestry, and animal husbandry; extraction of minerals; manufacturing and mechanical industries; transportation; trade; public service (not elsewhere classified); professional service; domestic and personal service; clerical occupations.

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1. One of the very common ambitions of boys is to become electrical engineers. In some respects this ambition is not unlike that of the boy of the Art Museum. Show why by finding out how many opportunities there are in this line.

2. Girls have much greater difficulty in finding a variety of occupations than boys have. Why is this so? What are the occupations open to girls? Which are the most profitable?

In addition to finding out what the opportunities are, one should find out as a second important set of facts what are the requirements in each occupation. So important is this type of study that careful lists have been made of the personal qualities which are required for certain callings. The following table gives an illustration of conditions of efficiency and success as adapted from an outline prepared by Frank A. Parsons, the pioneer in the field:

Business manager.	Teaching.	Secretarial work.
Skill of hand and eye.	Love of work.	Skill in correspondence.
Accuracy, loyalty, hearty obedience to orders.	Enthusiasm.	Reliability, courtesy.
Working as if owner of business.	Sympathy with and interest in young people.	Care, accuracy.
Knowledge of the trade.	Character.	Trustworthiness.
Executive power, system.	Knowledge of subject.	Knowledge of analytic method and research.
Knowledge of haman nature.	Knowledge of human nature.	Knowledge of business economics and public questions.
Ability to get along with men and to get the best out of them.	Knowledge of method.	Organizing ability.
Sympathy, appreciation.	Health.	Tact.
Firm, kindly, tactful discipline.	Endurance and patience.	Energy.
Organizing ability.	Common sense and judgment.	Push.
	Tact and good nature.	Common sense.
	Memory and imagination.	
	Inventiveness and humor.	

Studies of vocational openings and of the kinds of ability required to fill these openings are now included in the courses of study in some of the schools of this country, especially in the upper grades and in the first year of the high school.

Furthermore, two general movements of nation-wide importance have grown out of these studies. The first is described as vocational guidance; the second as industrial education.

1. Give three illustrations under each of the chief divisions of occupations as listed by the United States census.

2. Try to work out a list of the personal qualities required in the profession of law. Ask some lawyer to improve your list. Work out another list for an occupation in which you are particularly interested.

3. Do you think it would assist a business manager in the selection of his employees if he had every applicant for a job check off on a list the personal qualities in which that applicant regarded himself as above the average?

4. Among the qualities set down for the business manager, which do you regard as most important?

VOCATIONAL GUIDANCE.

The movement for vocational guidance had its origin in Boston. Mr. Frank A. Parsons addressed a gathering of all the boys who were leaving the elementary schools. He wanted to find out whether the boys had plans for the future. He soon discovered that they knew practically nothing of the industrial world into which they were going; nor had they considered their own aptitudes or interests with reference to what they were going to do. Mr. Parsons talked with the boys in the group and asked them to meet him individually. So successful was this first experiment that in 1908 an office called the Vocation Bureau of Boston was opened by Mrs. Quincy A. Shaw.

THE BOSTON BUREAU.

The methods of this pioneer bureau were simple. The vocational counselor asked the boy who came to him for advice to fill out two papers. The first was a statement of the principal facts about himself that had any bearing on the vocational problem. The second was a self-examination in which the boy wrote down what he could about his own abilities in answer to a series of questions. The boy at the same time submitted his own choice of a vocation. On the basis of these papers the counselor made an analysis of the choice suggested by the boy, taking into consideration his home surroundings, his temperament and natural equipment, face and character, education and experience, and his dominant interests. With this information in mind he carefully considered the entire industrial field to make sure that the occupation proposed suited the interests and capabilities of the boy. When once a decision is reached, the counselor talked frankly and freely to the boy, pointing out what traits need development.

The bureau, after helping the boy to find a place, followed him in his first position and studied more closely his ability to do that

1. It is sometimes said that specialization has gone so far in industry that it is useless to offer vocational guidance. Do you see any reason for such a statement?

2. Make out a list of the qualities which you possess that in your judgment should help you to decide the occupation which you will enter.

3. What other advantages besides mere success in earning wages come from a proper choice of occupation?

4. If a person knows the reasons for his choice of a vocation, what advantages does he have in the way of opportunity for self-training?

particular kind of work. If, after a fair trial, he did not succeed well, a change was recommended.

THE CINCINNATI BUREAU.

The work of this first bureau has been much enlarged in other cities. The school system of Cincinnati has a group of scientific experts who make a study of children about to leave the schools and keep in contact with the children after they enter occupations. Various measurements are made of abilities of the children. Studies are also made of the different occupations and the effects which they produce on workers. In these and other ways the effort is made to fit children to the demands of the occupations.

VOCATIONAL EDUCATION.

The second great movement is that which aims to prepare young people for success in the different industries by special courses of training. Many different kinds of vocational courses are now offered in the schools of different States. Indeed, the Government of the United States has appropriated a large sum of money which is used in training teachers who are to give vocational courses and in the organization and equipment of schools for these special lines. Some vocational courses prepare directly for special trades. Others are intended to acquaint pupils with the general scientific facts on which industries are based and with the general facts about country and national life which are important for success in any occupation.

Agricultural and domestic science courses are not to be overlooked in this description of special forms of training for vocation. Nor should one forget that the various professions, such as law and medicine, have always been in the minds of teachers when preparing courses of study for schools.

EMPLOYERS ADOPT WISER METHODS OF SELECTION.

While people who are going into industries are thus becoming wiser in their selection and better prepared for their work, em-

1. What vocational courses are offered in your school?

2. Is it proper to speak of reading and geography as vocational courses?

3. There are some factories and other business establishments which give special education to their employees. Find out about such plans of education.

4. Why should the Government of the United States appropriate money for vocational education more than for teaching reading and spelling?

ployers are adopting new methods of selecting their workers. The methods are not entirely new. For many years railroads have carefully tested men before employing them as engineers. The United States puts aviators through the most rigorous tests before enlisting them. Managers of industry are beginning to make tests on a larger scale.

In some cases these tests have been carried very much further. Measurements have been made of the quickness of reaction on the part of workers. For example, in a bicycle factory an efficiency expert measured the speed with which 120 girls engaged in inspecting balls did their work. The girls who were slowest were discharged, and the final result was that 35 selected girls working for a short day did the work formerly done by 120 girls. This permitted almost a doubling of the wages of the girls who were employed and a reduction in cost to the factory even after this increase in wages.

Sometimes these tests bring out information with regard to an occupation that would hardly have been possible without the careful study made by the test. It used to be assumed that the quickness of finger action is of chief importance in setting type with a type-setting machine, but a series of tests made with users of these machines brought out the fact that the number of words which can be carried in a man's memory is of much greater importance for success than the rapidity of his finger motions.

These examples show some of the efforts which are made to fit individuals to those kinds of work for which they are best suited, in order to avoid the waste of human energy which always follows unwise choice of a vocation.

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Chapter III.

MACHINE INDUSTRY AND COMMUNITY LIFE.

The living things of the earth, the currents of the air, the falling water in the streams, the expansiveness of steam, the force of electricity, and the explosions of dangerous substances have in turn been required to lend their aid in performing the tasks of man. His mastery over nature embraces but an insignificant part of her mighty forces, but that part multiplies a thousand fold and more the work which man can accomplish. The mechanical devices by which this result is reached have been evolved gradually. Their development has come almost entirely within the past two centuries, and it has been accelerated with the passage of years, for each improvement suggests many others.

The quick communication of intelligence between distant places has been important in all degrees of civilization, and it became increasingly necessary with the industrial development of the past century. It is characteristic of the age that inventions and discoveries in many fields proceed with equal steps. With many trained minds employed upon a great problem, the solution has not usually been long delayed. If Morse had not invented the telegraph in 1837 some one else would, in all probability, have done so within a few years at most; others were at work upon the problem of transmitting the human voice when Alexander Graham Bell announced the invention of the telephone, and judicial decisions were necessary to determine all the rights in the matter. The need existed and the inventions followed. And the President, in Washington, may now communicate with the armies in France more easily than Napoleon could communicate with a regiment a half mile away.

The machine and the factory have done more for the home than merely to lighten its labors. They have taken away its laborious tasks; but they have also taken away the women who had performed those tasks. Women still make the cloth for the family's garments, but they make it within the walls of the factory.

LESSON B–9. HOW MEN MADE HEAT TO WORK.

By Franklin T. Jones,

University School, Cleveland, Ohio.

No machine can do its work without power. What would a locomotive be able to do if there were no fire under its boiler? What would a factory be worth if the wheels stood still? The invention of machinery has always required at the same time the discovery of some kind of power to do the work.

ANIMALS AS SOURCES OF POWER.

At first man learned to add to his own strength that of the animals. The Eskimo trains his dog to help him draw the sled

over the ice. In the ancient world and even down to modern times the ox has been a helper on the farm and on the journey. The natives of India use the elephant to help them carry their burdens and to lift logs for them in their lumbering. The horse has long been used by man; in the early days only for what were considered the more important and nobler services, such as carrying man himself, and in warfare.

Without the added power which comes from animals, many of the modern industries would be impossible. Try to imagine what a farm would be without oxen or horses, and it will be evident at once that man has used his brains to help his own comparatively weak muscles in conquering the soil.

POWER FROM WIND AND WATER.

After animals came the harnessing of the wind and water. In the earliest days of history we find that man knew how to use the wind to drive his boats. The war boats of the Greeks and Romans were driven by oars because the demands of naval warfare made it impossible to rely on the uncertain wind, but the merchant boats which did not have to move with regularity were carried along with the help of sails.

Still later the wind was harnessed by the windmill and was used to grind the grain, thus helping man in what had been up to that time one of the most laborious of his tasks.

After a time man learned to use the power of the swift streams to do his work for him. Water is even now one of the most im-

1. What are the differences in power between people? Compare a man and a boy, for example.

2. Several people sometimes work together in the effort to produce power. Give examples.

3. In dealing with the use of human power and other kinds of power in industry, the matter of costs must be considered. What does it cost to use horsepower on a grocery wagon, for example? Is it more or less expensive to use an automobile? Or make the comparison for a thrashing machine or a churn.

4. Find other examples than those in the text of the use of animal power.

5. Warships are always supplied with the most effective power that can be secured, regardless of expense. Show that this is true of a modern navy.

6. Where are windmills common to-day? Explain the reason.

portant sources of power. The building of great electric plants in mountain regions where water power is abundant promises to be increasingly a source of profit to man and an aid to industry.

INVENTION IS STIMULATED BY THE DISCOVERY OF POWER.

With every new kind of power which he has taken into his service man has found new reasons for making tools and machinery. The ox could not till the soil without the help of a plow. The plow is a kind of hand supplied to the animal by the wisdom of man. It would be hard to decide which required the greater intelligence on the part of man, to make the plow or to tame the ox. In the same way the use of wind to drive a boat means making a sail and setting up a mast in the boat. The power of the river can be used only by the man who can invent a water wheel. Machinery needs power to drive it, and power is of no use until it is harnessed by machinery.

HEAT AS A SOURCE OF POWER.

There is one kind of power in the world which it took man a long time to learn to use as a helper in his work. That is heat. The comfort that comes from a fire and the usefulness of a fire in cooking food were known to man in the earliest ages, but the use of heat to lift weights and save human strength was possible only after man had gone a long way on the road of invention.

Heat probably never would have been harnessed and set at work by man if he had not found coal and by its use been able to produce a very hot fire which gave him abundant heat that could easily be put wherever it was wanted.

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1. Water power is costly because of the large investment of capital which is involved and because of the cost of transportation. Explain both these statements.

2. Water power is a great conserver of coal. Show why.

3. Water power is dependent on the sun's heat. Show why.

4. Why are electric plants rather than mills built near water-power sources?

5. "The course of invention has been from that which was obvious to that which could not be seen without the aid of science." Show that this is true especially in the use of heat.

6. Heat is present all about us. Why can the heat from the sun not be used to run a factory?

7. What is the source of the heat which comes from the burning of coal?

The first successful method of using heat for power was devised in the Cornish mines in England in the seventeenth century, 100 years before the American Revolution.

In the extreme southwestern end of England there are tin mines which were famous even in the ancient world. These mines could be worked only when they were kept free from water. We are told that pumping out the water from one of these mines required the labor of 500 horses and the men to drive them.

SAVERY'S ENGINE.

In 1698 Thomas Savery secured a patent for a pumping device which was the first steam engine. It did not look at all like a modern engine. It had no wheels or moving shafts, but it used heat to do work. The work that it did was to suck water out of the mines. It made the heat from a coal fire do what men and horses had done before.

Savery's engine consisted of a tank which was connected with a steam boiler on one side and on the other side with a pipe leading into the mines from which the water was to be pumped. The tank was first filled with steam. This drove out all the air by filling the space inside the tank with the hot vapor. The steam valve was then shut and a stream of cold water was poured over the hot tank. This condensed the steam very rapidly. The important fact to remember about steam is that 1,700 cubic inches of steam will condense into a single cubic inch of water. When Savery's tank was cooled off the space that had been filled with steam was turned into a vacuum. He then opened a valve into the water pipe and the water was sucked up into the tank.

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1. What is the principle involved in constructing a pump?
2. Savery's engine could draw water up only about 20 feet. Why?
3. It is easy to see why a mine is compelled to pump water constantly. How is a modern mine cleared of water?
4. Do other substances besides steam shrink in bulk when they are cooled off?
5. What practical applications are made of the property of substances referred to in the last question?
6. Does water decrease in volume when cooled?
7. What devices are used in the modern world to produce vacuums, and what practical applications are made of these devices?
8. Does the air about us have weight? How can the answer to this question be proved experimentally?
9. What is the pressure of air inside an automobile tire? In a bicycle tire?

After water was in this way drawn into the tank, the water pipe was shut off and the steam valve was opened again and at the same time an outlet pipe was opened through which the water could be forced out of the tank. The new steam coming in drove out the water and at the same time filled up the tank ready for the next pumping by condensation.

NEED OF GREATER ECONOMY.

Savery's engine was by no means economical of fuel. It is easy to understand what we mean by the statement that a machine wastes power. If a man who is trying to lift something can not get hold of it in such a way as to apply all of his strength, his lifting will be very wasteful. We try to make it easy to lift things by putting handles on them. Handles are inventions intended to save human energy. In exactly the same way when a machine can not concentrate its power as it should there will be a waste. Savery's engine was wasteful because the tank had to be first heated and then cooled, and a great deal of power went to waste.

It has been calculated that Savery's engine so used steam that he got out of it only about one-twentieth of the work that can be secured from the same amount of steam in a modern engine. Even a modern engine does not use all the power that there is in steam. Anyone who has seen the steam escaping from a locomotive will realize that a good deal of heat is wasted even in the most perfect modern engine.

NEWCOMEN'S ENGINE.

The problem of saving heat and using it to the best advantage has been one of the reasons for constant improvement in machinery.

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1. Discuss the general problem of economy, reviewing earlier lessons. What are some of the devices of legitimate economy practiced in industry?

2. Mention as many inventions as you can which have economized (*a*) human energy, and (*b*) energy in general.

3. Where have you seen power wasted? In mills the machinery is kept running at times when it is not in actual use. Is it always economical to shut off power?

4. In modern shops of certain kinds each machine is supplied with a separate electric motor. Why does this make for economy?

5. Find out what part of the power of steam is utilized by a modern engine.

6. What becomes of wasted heat?

7. Friction produces heat. Why?

8. Can heat be stored up?

Within a few years after Savery had invented his engine a new pumping engine was invented by Thomas Newcomen. In 1705 he patented an engine which consisted in a piston that worked up and down in a cylinder. Steam was admitted beneath the piston. This forced the piston up. The power of the upward moving piston was applied by a cross arm to a pump. In order to bring the piston back again in Newcomen's engine, the steam had to be condensed by cooling the cylinder. As soon as this steam was condensed, the piston fell back again and the cross arm attached to it was carried with it. This mechanism worked very much better than Savery's pump and came into extensive use in pumping water out of mines.

AUTOMATIC ENGINES.

The valve which was used to let in the steam was operated by hand. This was a boy's work, and we are told that in 1713 a boy named Humphrey Potter saw the possibility of connecting the valve by means of a cord with the moving parts of the engine and in this way relieving himself of the necessity of opening the valve each time the steam had to be admitted. The engine was thus made to run itself. We speak of an engine that does this as an automatic engine. All modern engines are automatic. The moving parts admit the steam at the right moment and the steam in turn drives the parts which do the work.

Many pumping engines of the Newcomen type were manufactured. They made possible in Cornwall the enlargement of the mines. In some cases the mines were sunk to twice the depth

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1. Find out about cylinders and pistons by looking at a modern engine.

2. What is the difference between a gas engine and a steam engine?

3. Could steam be used to drive an automobile? An aeroplane?

4. The cross arm is used in modern machines. Give examples and show how it works.

5. What is a valve?

6. Mention as many automatic devices as you can.

7. The limit of automatic machinery is reached when successful operation depends on the presence of intelligence. Describe a number of cases where automatic devices will not work.

8. Is reversing an engine ever automatic? Can all engines be reversed?

9. Describe automatic devices which depend on electricity.

10. When weight clocks were substituted for sand glasses men were relieved of the necessity of watching. Explain.

that was formerly possible, and thus opened up rich stores of new ore. A very large engine with a cylinder 66 inches in diameter and a stroke of 8½ feet was built to empty the great dry dock at Kronstadt constructed by Peter the Great. Before this engine was completed the dock was emptied by two windmills, each 100 feet high. They required a whole year's time to empty the dock once. Even this new engine was very wasteful of power, and industry had to wait for a later inventor to make the improvement most important for the general use of steam power in industry.

JAMES WATT AND THE STEAM ENGINE.

Accident plays a great part in the history of men and even of nations. James Watt (1736–1819) was not permitted by the guilds or trades-unions to open an instrument-maker's shop in Glasgow. As a result he secured employment at the University of Glasgow to repair apparatus. A model of a Newcomen engine was brought into the shop for repair. Watt at once saw that to work properly a steam engine should work always hot instead of alternately hot and cold, as engines previously invented had operated. He realized that steam, and hence fuel, could be saved and an engine be made capable of doing more work by keeping the cylinder and working parts of the engine hot. He therefore introduced a separate condenser which accomplished the result desired.

THE DOUBLE-ACTING ENGINE.

The original piston steam engine of Newcomen and Watt resembled our modern gas engine in the fact that its cylinder

1. Find out what changes in the manufacturing world followed the invention of the steam engine.
2. How soon was steam applied to transportation and by whom?
3. What are some of the uses of steam power in your town?
4. Are other sources of power used in any of the manufactories in your town?
5. What is done in the modern engine with exhaust steam?
6. Find out about some of the inventions and inventors following Watt. Who was Corliss? What is an eccentric?
7. What is the horsepower of the most powerful engines?
8. What horsepower can a man pull?
9. How do wheels on a cart lessen the pull required to move a load?
10. What devices were used for moving loads before wheels were invented?

was closed at one end only. The force due to the steam was all applied inside the closed end. In economizing steam Watt closed both ends of the cylinder and then applied steam alternately on both sides of the piston. Since that time engines have been double-acting; that is, steam is admitted first at one end, then at the other end of the cylinder. Watt also made use of the expansive power of steam, though it remained to later inventors to perfect the high-pressure, noncondensing steam engines which we are accustomed to use.

Since that day invention after invention has improved and perfected the steam engine until we have the powerful engines of modern times.

What the engine does for us can be made clear by one or two comparisons. Thomas Savery used the word "horsepower" in telling about the work of his pump. James Watt took over the word "horsepower" and gave it a more exact meaning. He estimated that the average cart horse of London could travel at the rate of 2½ miles per hour and at the same time raise, by means of a rope led over a pulley, a weight of 150 pounds. This is equivalent to raising a weight of 33,000 pounds 1 foot high in one minute. When we say, then, that a locomotive has a horsepower of 1,500 we mean that this locomotive has 1,500 times the power necessary to raise 33,000 pounds 1 foot, or the power of raising 49,500,000 pounds 1 foot in one minute.

The same kind of truth can be put in another way by comparing the carrying power of a freight train with the carrying power of men. A freight train can carry more wheat from Kansas City to Chicago in a given time than could be transported on the backs of 1,000,000 men.

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LESSON B–10. TELEPHONE AND TELEGRAPH [1]

An Indian stood looking at the distant horizon. He was watching intently some puffs of smoke that rose like little patches of cloud and melted away into the blue sky. The striking fact was that the smoke did not rise in a steady column, but in puffs with clear intervals between. The Indian recognized in them the signals of his tribesmen. He knew that a buffalo skin was held over the fire and that from time to time it was drawn aside so that a puff of smoke could rise. Then the skin was held over the fire again to interrupt the smoke. The number of puffs and their length had been agreed upon and the distant observer was interpreting the message.

There have been other methods of signaling at a distance. The modern wigwag of the military signal service is an example of a complicated system of communication devised to carry farther than the human voice. This modern method and the Indian's smoke signal show how eager man has always been to overcome space.

MECHANICAL DEVICES FOR COMMUNICATION.

The real conquest of space had to wait until mechanical inventions reached a high state of perfection. When wires and batteries and other means of harnessing the electric current were well known to science the time had come for a man of genius to give to the world a highly perfected means of communicating at a distance. We do not always think of the telephone and telegraph as machines, but such they are. They are no less machines than the dynamo that develops the electric current or the motor which drives the trolley. Some one has called them machines for overcoming space.

THE INVENTION OF THE TELEPHONE.

The telephone was invented in 1876 by Alexander Graham Bell, a teacher of vocal physiology in Boston University. He was a thorough student and knew what was known in his day of the physics of sound and electricity. He had spent much time and effort trying to find a way of sending several messages at one time over a single telegraph wire. While working on this problem he

[1] This lesson was prepared by W. C. Reavis, Harris Teachers College, St. Louis, Mo. It deals with the mechanical devices which make possible communication at a distance. It shows that mechanical invention is a broad term and includes much besides ordinary factory machinery.

discovered how to vary the strength of a current of electricity without breaking it. He applied his discovery to the problem of transmitting the voice. Within 60 days after he began to perfect his instrument he was far enough advanced to exhibit it to the public at the Centennial Exposition in Philadelphia. At first it received little notice, but toward the end of the summer of 1876 it began to attract great attention. It was regarded more as a freak toy or parlor novelty than as a useful instrument. Its real usefulness was not even dreamed of, except by the inventor himself.

The growth of the telephone as a practical invention was at first slow, like many other inventions; but gradually its usefulness dawned upon the public. People found that it was a great convenience to be able to send and receive news quickly, and the business world discovered that business could be conducted with the telephone more rapidly and successfully. To-day, we see so clearly its importance that we call telephone companies "public service" companies. Some countries have felt it wise to have the telephone and the telegraph operated by the State.

Its present wide use would never have been possible without many improvements which have been made since the days of the first telephone. By patient scientific studies, each detail has been worked out. To-day the range of the telephone is very great. Recently a transcontinental telephone line was completed, and persons in San Francisco easily conversed with persons in New York and in Boston.

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1. What other mechanical devices than the telephone and telegraph are used in communication? Are any of these used in war?

2. Make a list of the ways in which the telephone is used in the present war.

3. Where and how is copper produced? For what is it used in the telephone industry?

4. What is an electromagnet? Of what is it made?

5. In what ways is an individual's efficiency increased through the use of the telephone?

6. How many types of telephone substations do you know?

7. In what ways would the teaching of vocal physiology aid Bell in inventing the telephone?

8. Why are telephone wires underground? Why were they at first carried on high poles?

9. What "public utilities" other than the telephone can you mention? Why do we not call drug stores public utilities? They serve the public. If not every business which serves the public is to be called a public utility, what is the correct test?

THE TELEPHONE SYSTEM.

A telephone and its connections may be considered in three divisions: The substation or single telephone, including the transmitter, receiver, and bell box, located in the home or business house of the subscriber; the wire plant, including the overhead and underground wires which connect the subscriber with the central switchboard; and the central switchboard, or terminal of all the lines of the system.

The outer appearance of the telephone substation is familiar to almost everyone, but we seldom think of the interesting internal mechanism that obeys our touch. What happens when the receiver is lifted from its hook? The signaling apparatus by which the telephone is "rung" is at once cut off and a light glows above the number on the distant switchboard. What happens when one speaks into the transmitter? The sound vibrations of the voice strike the little metal plate at the end of the mouthpiece, causing it to vibrate; this in turn produces variations or undulations in the current of electricity which is flowing along the wires. These variations reach the receiver of the person with whom one is speaking, where the process which took place in the transmitter is reversed, and sound vibrations are produced by the electric current acting on a metal plate in the receiver.

THE WIRE PLANT AND CENTRAL SWITCHBOARD.

The wire plant of the telephone system includes all the lines that connect the substations with the central switchboard. Sometimes these wires are scattered singly on poles over the city, but there is a growing tendency to collect the wires in lead cables. Sometimes these cables are carried by poles; sometimes they are placed in conduits buried in the ground.

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1. How do the telephone and telegraph aid the civil authorities in maintaining order, apprehending criminals, etc.?

2. Make a list of instructions on how to use the telephone. How should one answer when the telephone rings? Why? How should one begin a telephone conversation?

3. What is meant by calling a telephone company a public service company? What other public service companies do we have? What is the point to the talk about "regulation of public service companies"?

5. On a map of your city or community locate the central switchboard. What are the advantages and disadvantages of its location?

6. Telephone companies advise their subscribers to be careful not to get the wires on their instruments damp. What is the reason of this caution?

The central switchboard or telephone exchange is the clearing house for all the telephone lines of a system. It is usually located in a large room and extends around the walls in a curve or hollow square.

The upright part of the board is a panel containing a large number of small holes, numbered consecutively. These holes are at the ends of the various lines of the telephone system. The horizontal part of the board is a tablelike shelf about 18 inches wide, constructed at right angles to the upright section. It contains two rows of metallic plugs attached in pairs to wire cords. These are the means by which all telephone connections are made.

OPERATING THE CENTRAL SWITCHBOARD.

For each hole in the panel there is a tiny electric light which glows when a subscriber lifts the receiver from the hook of his telephone. At this signal the operator puts one of a pair of the plugs in the hole below the light and then she can talk with the subscriber. After she hears the number desired, she inserts the other of the pair of plugs in the hole belonging to the number called for and the bell of the person called is rung. The light in the upright section of the board now goes out and a light on the horizontal board near the plugs glows and remains lighted until the receiver of the party called is taken from its hook. When either party replaces his receiver one of the lamps on the upright board glows to give the operator the signal that the conversation is ended. She then disconnects the plugs and they fall back to their places.

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1. What is the long-distance telephone? How does this method compare with the telegraph in transmitting messages rapidly over considerable distances?

2. Make a visit to the nearest telephone exchange and write a description of what you see.

3. What is the value of understanding the mechanism of the telephone? Can you think of any ways in which you can get better telephone service because of such knowledge?

4. How has the telephone influenced the social life of the American farmer?

5. How does the automatic switchboard work?

6. Any telephone central board is now very largely automatic. What is the advantage of this?

7. On the other hand, what is the advantage of an operator?

8. What would be the advantages of the wireless telephone? Why is it not yet a commercial possibility?

UTILITY AND SPREAD OF THE TELEPHONE.

No mechanical invention of modern times has been more useful to society than the telephone. In the 40 years of its existence the telephone has extended its wires over millions of miles and has served millions of people. The Bell Company alone, to say nothing of the many great independent companies, had in operation in 1916 in the United States 19,850,315 miles of wire and 9,847,192 substations. It cared for approximately 29,420,000 calls daily, which means an average of 100 calls per year for every man, woman, and child in the United States. The telephone lines carry more communications than the combined total of messages sent through the Post Office Department and the telegraph service.

THE TELEGRAPH.

The telegraph preceded the telephone in point of time about 40 years. It was a much simpler invention than the telephone, but the scientists of that day regarded it as a great achievement. The general principle of the telegraph had been known for a long time before Morse perfected his instrument, but the general principle was not useful until it was successfully applied.

THE FIRST SUCCESSFUL TELEGRAPH.

The first successful recording electro-magnetic telegraph was invented in 1837 by Samuel F. B. Morse. The United States Government granted him a patent on the invention in 1840 and four years later voted an appropriation of $30,000 for the construction of a line between Washington and Baltimore for the purpose of testing the practical utility of the invention.

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1. "Many dependent and related industries are rapidly developing around the telephone industry." Can you mention any such industries?

2. What would be the effect on the business of a city if its telephone service were interrupted for one day?

3. Of what value is the telephone in railroad service?

4. Some one has said that the telephone and telegraph have done more to unite our people than any other devices. Is this true? Is it important that our people should be united?

5. Get your teacher to plan debates on the following questions: (*a*) Resolved that the telephone renders a greater service to mankind than the telegraph. (*b*) Resolved that competing telephone companies render better service to a community than a single monopoly.

6. In what respects is the telephone an educator?

7. Why is a person's life enriched by the existence of the telephone even if he has never used one?

THE RAPID DEVELOPMENT OF THE TELEGRAPH.

Within a very short period the success of the telegraph as a means of communication was fully established. It followed the stage coach and the railroads westward, connecting the frontier with the cities of the East. After the invention of the submarine cable it followed the steamships across the sea. Now there is scarcely a country in the world which is not in cable communication with the rest of the world.

In 1916 the Western Union Telegraph Company alone had in operation 237,668 miles of poles and cables supporting and protecting 1,627,342 miles of wire, over which more than 75,000,000 messages pass yearly.

When one thinks of the fact that these messages make possible the morning paper with its news of the world, great business transactions, and constant reports of Government officials to headquarters, one begins to realize the importance of the invention. How life was carried on before men had these rapid means of communication can hardly be understood.

THE MECHANICS OF THE TELEGRAPH.

The mechanics of the modern telegraph are very simple; so simple, in fact, that a boy with ordinary mechanical skill can construct a telegraph with ordinary tools and at a very small cost. A common telegraph consists of but four parts: A battery, or gravity cell, which generates the current of electricity; a telegraph key, or sending instrument, for breaking and closing the current; a sounder or electro-magnetic receiving instrument which gives out sounds when the current is made and broken by the sending instrument; the wire which conducts the current from one point to another.

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1. What is the fundamental difference between a telephone and a telegraph? In what respects does a telegraph sounder differ from a telephone receiver?

2. What use does a newspaper make of the telegraph?

3. Mention other institutions which depend upon the telegraph.

4. Telegraph companies send messages as day messages, day letters, and night letters. What is the difference in the service given these different classes of messages? What is the difference in rate?

5. Find out the telegraph rate between your city and the capital of your State; between your city and New York, Chicago, Washington, San Francisco. What does a cable message cost? What determines the rate?

THE MORSE ALPHABET.

Messages are sent by telegraph in the Morse alphabet which consists of a series of short and long sounds, known as dots and dashes, and separated by periods of no sound, or spaces. These in different combinations represent the letters of the alphabet. These signals are sent over the wire through the breaking and closing of the current by means of the telegraph key which is operated by a downward stroke of the hand. The receiving operator hears in his sounder clicking sounds made by the interruption of the current of electricity in his instrument.

SUBMARINE CABLES.

After nine years of effort marked by partial success and failure, Cyrus W. Field, of New York, succeeded in laying a submarine cable between England and America in 1866. Since that time cables have been laid in all the oceans. The last definite figures of this branch of telegraphy gave the number of operating cables as 1,750, with an aggregate length of 200,000 miles, over which more than 6,000,000 messages are carried annually.

THE WIRELESS TELEGRAPH.

No invention in the field of electrical instruments has created more interest than wireless telegraphy. Like the common telegraph, its principles were well known to scientists, and several partial successes were made before the invention was perfected and its practical usefulness shown by the youthful Italian inventor, Marconi.

Working with the well-known principle that electromagnetic waves travel readily and with great rapidity through ether, Marconi's problem was one of successfully starting the waves, and

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1. The Government had to help Field lay his cable. Why?

2. How is a cable made and how is it laid?

3. Is the message received from a cable in the same way as in an ordinary system?

4. Why did the Government dismantle private wireless stations at the beginning of the war?

5. Receivers of the wireless systems are sometimes "tuned." What does this mean and why is it done?

6. What is an S. O. S. signal?

7. "The telephone and the telegraph have fostered business activity." Make a list of the ways in which they have done so.

8. If the telegraph, the printing press, and the telephone tend to bind people together and promote friendship, how does it happen that we are in the midst of a great war? Does the existence of the war prove that these devices do not tend to promote friendship?

of gathering them up again and recording them. For this purpose he used a sending instrument, which offered no problem, as the Morse sending instrument furnished a pattern; a receiving instrument, which presented a difficult problem; and aerials or wires that would give off the electric waves into the ether, and likewise gather them up. His chief problem was to perfect the receiver.

In March, 1899, Marconi had made such improvements in his instruments that he was able to send a wireless message across the English Channel, a distance of 32 miles. Two years later he succeeded in sending messages across the Atlantic Ocean. Since that time the Marconi system of wireless telegraphy has been adopted by nearly all civilized countries. Scarcely a ship of any importance now ventures out to sea without a good wireless equipment.

The mechanical devices which have been described in this lesson do much more than put individuals in communication with each other. To be sure, one telephones to his friend or to some one with whom he has business, or he telegraphs or cables. This is, however, a very inadequate statement of the case. The significant point is that these devices enable us to communicate with one another more quickly and more fully than was formerly possible. They have thus fostered the development of business activity and have eliminated many delays. This has made it possible for us to produce more goods.

It is even more significant that through the interchange of messages nations have been brought into close relations and through the constant interchange of ideas civilization has been promoted. In olden days ideas traveled slowly. Now they go around the world in an instant. The alphabet, the printing press, the telegraph, and the telephone are links in a chain which will more and more bind people together and promote friendship.

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LESSON B–11. THE WORK OF WOMEN.[1]

We have seen in earlier lessons that most of the articles used in everyday life were once made by hand with simple tools and are now made in great factories by power-driven machines. The coming of this new method of production has worked great changes in many respects. This is especially true of the activities of the household, and hence of the work of women.

The lesson on the colonial family showed what an important place the woman played in production in the days when the family made practically all the articles it used. As towns grew and trade and commerce developed, the work done by women within the households increased. The busy housewives not only supplied their own families but also utilized their spare moments in making things for the market. This work was done, as we know, in the household, with very simple tools.

The great change came about after 1750, with the introduction of power machinery. Goods could be made more cheaply in large quantities by these machines, and the household could neither afford the expensive machines nor command the power to run them.

THE TRANSFER OF PRODUCTION FROM HOME TO FACTORY.

The result has been a steady transfer of one activity after another from the home to the factory. The textile industries were the first to go because the first successful machines were in these industries, but it has been found that the same machine methods can be applied to many other household arts. A list of all the industries which have left the home, either in whole or in part, would be very long indeed. It would include all the textile industries, the making of hats, caps, gloves, mittens, and many kinds of men's, women's, and children's clothing, carpets and rugs, soaps, drugs and cosmetics, dairy products, meat products, and various kinds of canned and dried foods.

PREPARATION OF FOOD.

Of course, the ordinary household is still a busy place. Many activities have been retained wholly or in part. An example of this is the preparation of food.

[1] This lesson was prepared by Hazel Kyrk, assistant professor of economics, Oberlin College. It introduces the problem of women's participation in modern industry.

The facts with regard to this phase of woman's activities are very complicated. In this country women are for the most part not engaged in the heavy work connected with the cultivation and harvesting of crops. The preparation of the food is in a measure carried on in factories, so that some foods are bought by the housewife ready to serve, while others require a great deal of preparation in the home. Into which group a given food will fall depends partly upon how readily it lends itself to machine methods, how perishable it is, whether there is a large market for it, and whether the article can be carried quickly from the producer to the consumer. City households can buy bread and cake from the near-by bakery, but country households must make their own unless there are fast trains and a good delivery system to bring such supplies from the city.

COOKING STILL LARGELY DONE IN THE HOUSEHOLD.

In spite of factory-prepared foods, cooking and the household work connected with it continue to be necessary parts of a woman's life. To be sure, kitchen appliances have been very much improved. The modern stove, modern cooking utensils, and domestic machinery of various sorts make unnecessary some of the heaviest work of earlier days. Even in many rural homes water has been piped into the kitchens, gas is available for fuel, and various devices for storing food, such as the refrigerator, have been made available.

The reason why cooking is still a domestic industry is clear when we consider the quantity and kinds of material that enter into the food supplies of the home. The small quantity needed makes

1. Where did the girls of colonial households receive their training for their future work?
2. Where do the girls of modern households receive their training?
3. What kinds of training should modern girls have?
4. There are many cases in modern times where a commodity is produced sometimes in a factory, sometimes in the home. Why should this be so?
5. Why are women knitting more now than they did last year? Why not leave the work to factories?
6. The text describes the kinds of foods prepared in factories. Find examples illustrating each statement and explain.
7. Find examples of the differences between the occupations of country homes and city homes.

a big machine unnecessary, even if a machine could handle the situation. But in many cases no machine has yet been devised which can take the place of the personal attention that most people demand in the preparation of their food.

COOPERATIVE COOKING.

It has often been suggested that cooperative cooking could be used instead of domestic cooking, but the suggestion is not a popular one. It is difficult to deliver food in good condition when prepared at a common center, and there is such a variety in tastes that people are reluctant to enter on such a standardized enterprise.

During this war, however, some European communities have been driven to cooperative cooking. Perhaps the main reason for this action was that of accurate apportionment. When all food is prepared at a common center it can be distributed under authority in such a way as to give everyone his fair share. Certain economics can also be secured by this method. For example, the housewife preparing a meal for a small family would think little of throwing away a few ounces of unused vegetables and some of the fat for which her family did not care. If, however, numbers of households did this the amounts involved would make a large total, and in time of great national stress all resources must be utilized. Our own Government is hoping to solve the food problem which the war has brought upon us by an appeal to the intelligence of housewives rather than through public kitchens.

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1. Mention a number of industries outside the home which are carried on on a small scale and are not appropriate to the factory. Explain the situation in each case.

2. What effects has the war had upon the problem of the modern housewife?

3. Mention several ways in which she can help in carrying on the war.

4. Has any official appeal been made for her cooperation?

5. What things should she not buy at present for which she can find substitutes?

6. What are some of the most common sources of waste in the household in food materials? In fuel?

7. Should the economies taught by the war end with the close of the war?

8. What would be the food condition of the world if the war ended to-morrow?

CARE OF THE DWELLING.

Another group of activities still partly left in the household are those services connected with keeping the dwelling and premises clean, orderly, and comfortable. Even some of these activities are being taken out of the home, or out of the hands of the household. For example, power laundries to some extent have taken the place of the housemother with the washboard or the laundress engaged by the day. Flat dwellers in cities turn over much of the work of "upkeep" to the hired janitor and his electrically driven vacuum cleaner. The janitor usually provides also heat and hot water and keeps the sidewalks clean. The city government cleans the streets, disposes of garbage, and offers water, gas, and electricity for sale, thus carrying on work that was once a part of private housekeeping.

CLOTH MAKING AND GARMENT MAKING.

Another interesting case of the division of the activities of woman between the home and the factory is seen in the manufacture of cloth and clothing. The processes connected with the making of cloth long ago left the home, but the making of cloth into garments has not yet gone over to the factory in all its branches.

It is easy to see why cloth making is done in the factory. In the year 1800, 25 people could do with the aid of the recently introduced machinery as much weaving as had been done 15 years before by 1,634 people. At present Fall River, Mass., turns out 2 miles of cloth for every minute of the working day. It would require the labor of every man, woman, and child in the world—that is, the labor of more than a thousand million persons—to do with the spinning wheel and hand loom what is now done by less than a million and a half workers in this and other countries in cotton alone. The housewife can not compete with the factory in producing cloth.

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1. Mention any other domestic machines you know not included in the list given in the text.

2. In many cities there are so-called family hotels. Show how a hotel may be an institution for cooperative housekeeping.

3. Repairing garments is a small-scale occupation. Show how this statement agrees with the other statements in this lesson.

4. How does competition bring about such changes as that referred to in the text?

THE SEWING MACHINE.

The making of the individual garments, on the other hand, has continued to be in some measure a home occupation. One reason is that mechanical inventions came much later in the sewing trade than they did in the spinning, weaving, and knitting trades. The needle and scissors were the tools used in garment making until 1850, when the first successful sewing machine came into use. After 1870 came a few other machines, which could be used to cut several garments at a time, to make buttonholes, to sew on buttons. But after all no revolutionary machines were invented in this line.

Furthermore, the sewing machine is a very different sort of device from textile machinery. It is not complicated or expensive. It is relatively easy to operate so far as power is concerned, and when run by steam or electric power it is not as superior to one run by foot power as the power loom is to the hand loom. Then, too, sewing requires closer attention than weaving. When the power loom is once set in motion the work goes on automatically until the thread breaks. Sewing, on the other hand, requires close and fairly continuous attention on the part of the operator.

GARMENT MAKING IS SMALL-SCALE WORK.

Factory production of garments does, of course, have its advantages in turning out large quantities, but the thrifty housewife can, by using odd moments, produce certain things as economically as the large-scale producer. In other words, the work is small-scale work by its very nature and is not readily taken over into the factory.

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1. Who invented the sewing machine? When?

2. What is the difference between men's garments and women's garments that results in making the former more commonly by the factory method?

3. Is the manufacture of men's garments a machine industry throughout?

4. What are the advantages of homemade goods over factory goods? Give examples.

5. What are the advantages of factory goods over homemade goods? Give examples.

6. When the factory takes over a home industry it creates leisure in the home. Is this always an advantage? How should the acquired leisure be used?

There is an important lesson in this illustration. The more completely and profitably machinery and nonhuman motive power can be applied to the making of goods used in the home, the more will home production be superseded by the factory.

Meanwhile, what were women doing while so many of their former activities were passing out of their hands as a result of changed methods of production and changed ways of living?

FACTORY EMPLOYMENT FOR WOMEN.

As household industries left the homes many women followed them and went to work in factories. The work itself was not necessarily new for women. It was spinning, knitting, and weaving, but they did these things by machinery and worked outside the home for a wage. The early mills and factories filled up with young girls who were the freest of all members of the family to seek employment there.

As factory production expanded, the number of women working outside their homes for wages grew also. The 1910 census lists 8,000,000 women who were thus employed. The striking thing about these 8,000,000 women is their youth. The same number of working men would be made up of the young, the old, and the middle-aged. But in many industries from one-third to one-half of the women are below twenty; a very small percentage is over twenty-five. Thus women have followed their work from the home to the factory only for a part of their lives. The period of life when most women work for wages is from the time of leaving school until marriage. In the very poor or very ignorant or very indifferent families, girls leave school for the factory as soon as the law permits.

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1. In the factories that you know about, what kinds of work are the women doing? What wages do they receive?

2. Why do women in factories typically do the work that is least well paid?

3. What are the laws of your State concerning compulsory school attendance? Of what advantage is it for a girl to stay in school instead of going to work at an early age? Of what concern is it to the State to have such laws?

4. What are some of the hardships that girls have encountered in factory employment? Can these be remedied? If so, how?

5. Of what interest is it to the State to have factories maintain good sanitary conditions?

All machine production can be very quickly learned even by the young and untrained. They can tend machines, paste on labels, fold paper boxes, dip candy, place covers on cans, but doing this gives them no training for higher kinds of work. Here is a partial explanation of the low average wage of working women.

Women have gone to work not in factories alone since their home occupations diminished. Great numbers of them work in department stores, offices, and the telephone exchanges. Most of these are new lines of work for both men and women, and have developed since 1870. It is "clean" work, and attractive for that reason. Certain lines, as the higher grades of clerical work, book-keeping, typewriting, and stenography, require special training.

The present war situation has increased the number of women in industry because the withdrawal of men to the army and navy makes a new scarcity of labor. Women are now employed in great numbers, in the European countries particularly, making munitions and equipment for the soldiers as well as carrying on some of the work formerly done by men in peaceful pursuits.

PRESENT WORK OF WOMEN WITHIN HOUSEHOLDS.

Finally, what is the work of women within the households at the present time? They have one important new function in return for the old one of "making" which they have given up. That is, they must "buy." Some one must provide the things for the

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1. Look into the United States Census volume on occupations and find in what other lines of work besides those mentioned women are found.

2. Is the entrance of women into department stores and offices an "effect of machine industry upon the work of women"? If so, why?

3. What influence should you expect the war to have upon women's work? Upon women's wages? Upon laws regulating the work of women?

4. Make a list of things which in your experience are usually bought by women.

5. What mistakes is an ignorant person apt to make in buying foods? Can we always tell when there are injurious ingredients in the food that is put on the market?

6. What mistakes are made in purchasing clothes, household utensils, etc.?

7. The Food Administration has distributed much information about saving. What have you seen of this information? What can you do to spread it?

family's use, once made at home, but now made in factories and offered for sale. This is the modern housewife's part in caring for the needs of her family. She must decide what to buy, hunt the goods up, make bargains as to price, and make the goods available for the family at the time they are needed.

It is by no means an easy matter to spend the family income when, as is usually the case, it is small as compared to the wants and needs of the household. If money is spent for one thing, the family must go without something else. The modern housewife ought to be as skilled in buying as her grandmother was in the arts of spinning and weaving. The welfare of the family is very closely bound up with her care and wisdom in spending money. She must know what her family's needs are. If she buys her children meat when they should have milk, or fancy ribbons when they should have warm clothing, they will suffer from her ignorance. Then she must know how to judge the quality of the things she buys. If there are tests to apply to shoddy or adulterated or impure goods, she should know them. On the whole, if the modern housewife works less with her hands than her grandmother, she should work as much with her brain, for it is no insignificant task that is hers, to plan the manner of living and carry on the expenditures for the family.

ONE WAY WOMEN MAY HELP TO WIN THE WAR.

This part of woman's work is of tremendous importance in connection with the war. It is the duty of our country to produce all it can of the necessities of life and to consume wisely, so that we may help our allies. Woman as the real director of consumption in the household has here the opportunity to contribute greatly toward victory over the enemy. The urgency of the matter at this time is the reason for a special effort on the part of our Federal Government to reach the women of the household with suggestions for wise utilization of food materials.

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LESSON B–12. IMPERSONALITY OF MODERN LIFE.[1]

Many times in our discussion we have seen that the methods people use in making things affect very much the ways in which these people live. The frontiersman, who made all the goods he consumed, lived an isolated, lonely life, almost entirely lacking in contact with other people of his kind. The colonial families, living in clusters along some waterway, also made, as a group, most of the things they used. All members of the little group came to know each other very intimately. Nowadays, the gathering of workers into large stores or factories (we call this "large-scale production"), the procuring of things we use through trade or exchange rather than making them all ourselves, and the massing of people in great cities result in a kind of life very different from that of former days.

THE INTIMATE LIFE OF A SMALL TOWN.

Picture to yourself the life of a person in a small village. He knows and calls by name every man, woman, child, and dog he meets. He meets the same people day after day at church, in the store, at social gatherings, and at town elections, and learns all the ins and outs of their everyday life. Every event which occurs in the village is of interest to him, if not of real concern. If he is successful in business or if he has business reverses, the facts are quickly known to all his neighbors. Indeed, the inhabitants of small towns live in such personal contact with each other that the writers of stories which tell of gossips or busybodies frequently locate these persons in a village or small town. This is a recognition of the fact that in such communities the relations between neighbors are very intimate.

Follow the man as he moves from the village to a new home in the city. Perhaps he moves into a flat building in which eight or ten other families live. These families are strangers to him, and are likely to remain strangers. He does not meet them in church or in the shop where he works, or on the street. Everywhere he goes he sees new faces. Strangers jostle him on the cars and in stores; strangers manage the plant from which his water supply comes; strangers run the electric light plant which

[1] This lesson was prepared by Leona Margaret Powell, department of political economy, University of Chicago. It shows the results of large-scale production and machine industry on the habits and modes of thought of people. Industry affects not merely material wealth, but the character of people as well.

furnishes his flat with light; strangers govern his city—strangers whom he may come to know by name but generally not by sight. He trusts the teaching of his children to strangers. He depends on strangers to take care of him at the hospital if he is sick. He is dependent in a hundred ways on people whom he never sees or perhaps sees but once or twice. The milkman who brings the milk to his flat may come and go a hundred times without so much as a single word of salutation.

ACQUAINTANCES INCREASE; INTIMATES DECREASE.

Suppose he works in a big store or factory. There will be at his side dozens or even hundreds of other workers, but he is not likely to become intimate with very many of them. If he goes to a lodge or a church, he meets there a group of people whom he sees in no other place. He comes in time to know slightly a hundred times as many people as he knew in his village life, but never to know any of them in the complete way in which he knew his village friends. We see that his relations with other people are more impersonal in character than his village relationships.

It is clear that the city is much more impersonal than the little village, but even the village of to-day is impersonal as compared with the village of a hundred years ago. In former days the people of the villages nearly always knew in a personal way the people who made the various things they used. Very frequently they were made right in the family circle. If they were not so made, the chances are that the villager would know from what neighbor's farm the wood or flax or lumber or leather came and would know everyone who worked these raw materials into finished goods.

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1. Does it make any difference to you that you do not know the clerks who wait on you in the big stores?

2. Is it safe to let strange policemen do all that is done to protect people's houses from robbers?

3. How can one depend on strange firemen to take any interest in keeping one's house from burning down?

4. Make a list of things in your home that have been made by people whom you know well; by people whom you have seen; by people whom you know by name.

5. Try to find out in what part of the country the furniture in your house was made and where the wood, leather, etc., came from to make it.

6. Some manufacturers put into their advertisements a personal element. Find examples.

7. Name the different associations you know the aim of which is to get people acquainted.

His friend, the carpenter, helped him make his furniture; his neighbor, the cobbler, made the shoes for the family; his cousin, the blacksmith, shaped much of the iron ware he used.

ANONYMOUS PRODUCTION.

In the village of to-day the situation is very different. What article of dress or food or household furniture now used by village people could be traced by them to the person who made it? A few local industries still survive. A few of the householders in the village get their butter directly from some farmer's wife who churns it, shapes it, and brings it to the customer's door. But in many cases the butter is bought in packages marked with the name of some distant dairy, or perhaps not marked at all. Perhaps the village carpenter comes in and puts up a shelf which he himself has stained and finished; but the brackets on which the shelf rests come from nobody knows where, and were taken through all the processes from mining the iron ore to the final shaping by the people whom the villager has never heard of and will never know. His flour comes from an unknown miller's hands; his shoes were made in a distant factory by unknown workers. In brief, many of the things he uses have not the "personal quality" which was so characteristic of things in earlier days.

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1. If you should go to work in a cotton factory, could you expect to know any of the people who would finally use the cloth you were helping to make?

2. Can you name any industry in which you would be more likely to know the users of your product, at least by name? Where you would know them by sight? Where you would meet them at other places than in the place of business?

3. How does the railroad widen the distance between producer and consumer? How does the telephone widen it? The telegraph? Ocean steamers? Ocean cables?

4. Do you think we could produce things for people we do not know and never see if there were no such thing as money?

5. If each family produced all the things it used would there be any use for money?

6. Suppose there were no such thing as money. Could you spend your time making paper boxes and expect to trade them with other people for your food and clothes and everything else you wanted?

7. Can you name any industry where production could not be called anonymous?

THE MARKET AND ANONYMOUS PRODUCTION.

This modern way of meeting our wants is sometimes called the method of "anonymous production." We say a letter or a book is anonymous when we do not know who wrote it. So we can call production by unknown persons for unknown persons "anonymous production." Perhaps it is not strong enough to say that goods are made for unknown persons. The situation is still more impersonal. Goods are made for "a market" wherever that market can be found, and this is a very impersonal matter indeed.

IMPERSONAL MONEY EXCHANGE.

In the very early days of trade, a producer who had one product was likely to barter it or trade it directly with some other person who had a different article. The two people met each other in person and very frequently carried on a long conversation in effecting the exchange. To-day we have money exchange. A producer makes things in large quantities and sells them for money to a large dealer whom we call a jobber. The jobber sells them to a wholesaler, the wholesaler to a retailer, and the retailer to the consumer. Since we have such excellent methods of communication and transportation, it frequently happens that the producer and the consumer are thousands of miles apart and have no bond of connection whatever, unless one calls the impersonal money used in the various transactions a bond of connection. It is not surprising under such circumstances that some producers become careless of the best interests of the consumers whom they do not know and will never see and care only for making as much money as possible as quickly as possible.

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1. Do the people who produce services instead of products produce anonymously? Is the lawyer an anonymous producer? The teacher? The opera singer? The bootblack? The physician?

2. Why do we produce "what will sell" instead of "what people need"? Are these two things always the same?

3. Could a tailor depend entirely on personal recommendations from his customers for his trade?

4. Can you name an industry which gets all its trade in this way?

5. What amount of trade do you think is directed to concerns by their advertisements?

6. Why can you call advertising an impersonal way of getting trade?

7. What is the difference between the wholesaler's methods of getting trade and the retailer's?

8. Give examples of loose practices which grow up because of the impersonal character of modern industry.

THE IMPERSONAL CORPORATION.

As we know, things are done now on a large scale. We have big factories, big warehouses, big stores. It takes a great deal of money to run such big businesses—more money than most individuals have or, indeed, more than can be secured by several individuals uniting and forming what is called a partnership. Under these circumstances, a device called the "corporation" has come into being. This device makes it possible to get large sums of money together because it is an arrangement by which a great number of people may buy one or more "shares of stock," which gives them a part ownership in the concern. This tends to make even the ownership of business impersonal. When there was but one owner in a concern it was "his business" in a very real and personal sense. He made the plans, bought the raw material, directed the processes, and sold the goods. With the corporation, matters are very different. The owners are very numerous; they may not even be acquainted with one another; they do not "run the business" in any personal way. They elect a board of directors. The board of directors appoints a manager. The final result is that in some concerns there are a thousand or more owners scattered over several different countries who know little or nothing about the business and some of them care little or nothing about it. They are interested mainly in the rate of dividends they receive.

IMPERSONAL RELATIONS OF THE WORKER.

Our modern large-scale businesses make the relationship between the owner and the worker very impersonal. In the days of small industry, the master and the workmen were friends in a very real sense of the word. Indeed, the worker frequently lived in the home of the master and received trade instruction from him.

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1. Why do people buy stock issued by corporations?
2. Could the holders of shares of stock in the Bethlehem Steel Co. be personally acquainted with the workers in those mills if they cared to?
3. Do you know of ar[illegible] e or[illegible]y where the workers do not know the owner even b[illegible] happen only when there are many owners? Could[illegible] here is one owner who man-
[illegible]siness hi[illegible]
[illegible]ums [illegible] build a railroad? Is there any
[illegible] the way in which a corporation

When John Goffe, of Cornwall, England, was apprenticed to John Gibbs in 1459 to learn the "craft of fishing," it was part of the written contract that "John Gibbs and Agnes, his wife, should teach, train, and inform him in the best way they know, chastising him duly and finding for him food, clothing, linen and woolen, and shoes, sufficiently as befits such an apprentice to be found." Under the laws of England this intimate, personal relationship between master and apprentice lasted seven years.

BUSINESS ORGANIZATION IS IMPERSONAL.

Nothing like this is possible in the big businesses of to-day. There are few, if any, personal contacts between employers and employees. In the work place a whole system of organization—managers, heads of departments, foremen, subforemen—has come between the employer and the men. Impersonality also rules outside the work place. How strange it would sound to hear of a worker making a social call upon his employer or going to a ball game with him! It would sound even more strange to hear of the worker living with his employer, except in the case of farm work.

All this does not mean that employers give no thought at all to the welfare of their workers. Many do, but their interest must be expressed in a form which reaches a group rather than an individual. They organize welfare work, provide some kind of a club, set aside in the shop rest rooms for the women employed, and put in motion various other enterprises for improving the conditions of life of the workers. But large-scale industry forces this to be done largely on a group or impersonal basis. Where several thousand men are employed in a single plant and where the owners of this plant are members of a corporation, it is simply impossible for personal relationship to spring up.

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1. Do modern employers take apprentices? If so, do they provide food and clothing for them?
2. Why do employers need foremen and subforemen?
3. How could you call welfare work for groups of employees impersonal?
4. What welfare work do you know of in factories? In towns?
5. Some factories take a hand in the housing of workmen. Can you find examples?
6. Does welfare work pay the owner in a financial way?
7. What is meant by impersonal standards of work?
8. "Machines do work once done by human beings." Do they do it in the same way?

THE IMPERSONAL MACHINE.

Even the machines with which the men make goods to-day increase the impersonality characteristic of modern life. There are few things more impersonal than a machine when it gets into operation. It works according to physical laws and not according to the mood of its attendant.

If the worker is tired and has difficulty in keeping up with the machine, the steel and iron with which he has to deal have no sympathy for this feeling. If a man puts his hand into a die press, the machinery goes on working exactly as it would if he had put in the proper material to be stamped. An engine will not get off its track to spare a man who has been caught in its way. The law of gravitation, the pile driver, and the steam shovel at work are no respecters of person. Those who work with machines must understand this fact, for upon a clear understanding of it rests not only their efficiency as workers, but also their safety in life and limb. The machine works in terms of cause and effect. It has no personal likes or dislikes.

NEW VARIETIES OF WRONGDOING.

It is interesting to see how impersonality in our relationships to-day makes it easy for many people to do wrong to others without having it trouble their consciences. If the village carpenter knowingly put a piece of poor wood in a child's swing and the swing broke and the child was hurt, the carpenter could hardly help feeling guilty. But suppose that an ironworker turns out a poor piece of metal which is later made into a defective wheel, which one day bursts and kills five other workers in a shop 3,000 miles away. Will the responsible person have a feeling of responsibility? The chances are that he will never even hear of the accident. Or, take the case of the owners (stockholders) of a corporation who received large dividends because the corporation was doing something harmful to the public. Will these owners feel guilty? They may know nothing whatever concerning the acts of the corporation.

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1. What is meant by the "impersonality of the laws of nature?"

2. Did the canners who put preservative acids in the foods they were canning intend to injure people who used the food? Why did they use the acid if it was injurious?

3. Do you see any advantages arising out of impersonal relations such as those described in city life? Those between producer and consumer? Those between employer and workers?

THE NEED OF NEW STANDARDS OF CONDUCT.

The point is that we do not to-day deal as directly and as simply with persons as formerly. Goods are made for that vague and impersonal thing which we call the "market." We do not see personally the consequences of many of our improper acts. Indeed, unless we understand a good deal about how society is put together, we are not likely to realize that there are evil consequences. It is this situation that some persons have in mind when they say that "we must develop a new code of ethics or morals because the old, personal codes no longer meet the needs."

MANY DEVICES USED TO COPE WITH IMPERSONALITY.

But we can not wait for a new code of ethics to develop. Some of the evils of impersonal relationships are so serious that we meet them by using law and government. The time may come when we can put our trust in the virtue of meat packers, but at present we rely on Government inspectors of meat. We have at present more faith in our pure-food laws than we have in the piety of the men who run our canneries. So also the Government has stepped into the gap caused by the impersonal character of machine industry and provides for factory inspectors and for accident insurance and other payments to injured workers. The workers themselves have developed a group or impersonal device called the "trade-union" to take care of some of their problems. Some one has called the trade-union an impersonal means of meeting the difficulties of an impersonal situation.

The managers also have problems arising from the impersonality of modern business. For example, workers often do not have a personal interest in their tasks and thus turn out a small or a poor product. Systems of inspection, accounting, and latterly "scientific management" are some of the devices used by managers to meet the situation. It is a common saying that labor has largely lost its old "personal" incentives and that the "impersonal wage" does not adequately fill the gap.

It is evident that there are many new and puzzling problems connected with the ways that we live together in our modern industry and modern life and that much study will have to be given to their solution. This lesson should not leave with us the feeling that all the old personal ties have been broken. Far from it. There are, however, many instances where they have been broken or at least weakened, and here we must find something else to take their place.

Chapter IV.

NATIONAL CONTROL AND FOOD CONSERVATION.

National unity is the theme of this chapter. Executive departments and bureaus are devices through which the people of the Nation unite in formal and legal ways to bring about certain results for the common good.

Those governmental agencies can do only what the people, through proper representatives, instruct them to do. Our Government, therefore, is cooperative and democratic, and not in any sense paternal and autocratic like the governments of some of the European nations. That does not mean that any individual in our country would have the right to assume authority merely because he has a voice in the government, for the ways in which the people cooperate in government are very definitely fixed.

When a man is chosen as a public officer and is instructed in the proper manner to do certain things which the people want done, he has all the power that is necessary to do those things. He has no power at all, however, to perform any governmental act except the things that he was chosen to do, and he can do them only during the time for which he was chosen.

The President is elected to perform a number of very responsible duties which were determined long ago. He is clothed with ample authority, but at the end of his term of four years he becomes a private citizen again, with no more authority than any other citizen. The President selects 10 assistants who are members of his "Cabinet," and each one becomes the head of one of the 10 great departments into which the executive branch of the Government is divided. Each department is held responsible for its own special work, for which it was created by the Congress.

This chapter contains an illustration of the way in which these departments are organized and how their work is done. Other agencies of the Government are also described, and the reasons for their establishment are explained.

LESSON B–13. THE DEPARTMENT OF THE INTERIOR.

Prepared from information furnished by the Department of the Interior.

A great American scientist once wrote an essay describing a plan which he thought would do away with wars. He recommends in this essay that the Nation be organized as an army to attack nature and make her yield more abundantly all that man needs for his comfort and happiness. If men would join in attacking nature, they would stop fighting each other. If the whole Nation were made into an army, it would be easy to distribute the disagreeable tasks. In the army when men are ordered to dig ditches, they do it without any question. The world has to have ditches dug in times of peace. Why not divide up all the hard and dis-

agreeable work as the army does? If the nations were devoted in this way to a great attack on the problems of getting good things from nature, we should have—so our scientist said—a substitute for war.

THE NATION AT WORK.

The plan is in reality a long step further in a direction in which our country has already gone. People do not always recognize that a nation is a group of people working together for the necessities and comforts of life. When a nation has to defend itself by war against an enemy, then it is easy to see that the whole country is working for a single purpose through its army and navy. In times of peace when one man is cultivating a farm, another preaching sermons, another running a street car, it is much more difficult to see the common purpose which underlies the efforts of all the people.

It is easier to see the unity of national life when one goes to Washington and learns of the way in which the National Government is trying to cultivate all the resources of the country. There is a department of the Government, known as the Department of Agriculture, which deals with all the agricultural problems of the country. There is another department, known as the Department of Commerce, which finds out how many people there are in the United States, supervises navigation, sets up standards of weights and measures, determines standards of lighting and electric power, and so on. There is another department, known as the Department of Labor, which deals with labor problems. This has bureaus which study and control immigration and naturaliza-

1. The scientist referred to in the text is William James. Look up his essay and point out such reasons as you can for or against his plan.

2. Why is discipline more rigid in the Army than in ordinary life? Think of other times when discipline is absolute. Such as when a fire company is fighting a fire or when a captain on a ship gives orders. Why are these cases like the ones which come up in army life?

3. Do you favor military methods in keeping order in a school?

4. Show how each person mentioned in the text—the farmer, the preacher, and the street car conductor—is cooperating in the work of the Nation.

5. Get a list of the departments of the Federal Government and find out what are their chief lines of activity.

6. Find out something which the National Government does in your city or county and explain why it is necessary for the National Government to do this particular task.

tion, and others which collect information about working people and deal with problems related to the welfare of children.

A review of all these departments would soon convince one that there is a great national working army which is fairly well trained to make vigorous attacks on nature.

THE DEPARTMENT OF THE INTERIOR.

The various departments mentioned all grew out of the work of the Department of the Interior, which still has in charge many of the problems of national development. This department is of special interest to readers of these lessons, because one branch of that department, namely, the Bureau of Education, is responsible in part for the preparation of these leaflets.

The word "interior" as it appears in the name of this department calls attention to the fact that some of the departments of the Government deal with matters that are exterior or outside the country. The Department of State prepares our treaties and cares for our international relations. The Departments of War and Navy are clearly concerned with matters outside the Nation. There are other departments which share in promoting the internal development of the country, namely, the Post Office, the Treasury Department, and the Department of Justice. The Department of the Interior does not have one single type of work to do, as does each of these last-mentioned departments, but is made up of a number of divisions or bureaus, the varied duties of which may be briefly described.

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1. The heads of a number of the Federal departments are called Secretaries. Why? Who appoints them?

2. Look up some of the publications of the various departments and find out what kinds of subjects are treated in these reports.

3. Can the Department of State conclude a treaty with a foreign Government?

4. From time to time new Federal departments are created and the powers of existing departments are changed. How is this done?

5. In European countries there is another method of appointing heads of departments. Find out about the method of England and France.

6. There is a great deal written these days about the German chancellor and the fact that he is not responsible to the Reichstag. What does responsibility in this case mean?

7. Could Congress dismiss one of our Cabinet officers?

8. Are the members of the President's Cabinet responsible to Congress?

9. There are certain rules of appointment within our departments known as civil-service rules. Who makes and administers them?

THE LAND OFFICE.

The Land Office has charge of the public domain; that is, of the land which is not owned by individuals. Whenever a new territory is opened up, the land belongs to the Government and individuals can get titles only when the Government gives them titles. This is true of mineral lands as well as agricultural lands. The Land Office has charge of all land which belongs to the Government, or is part of the "public domain" as it is called. In 1915 there were a little over 200,000,000 acres in the United States and 400,000,000 acres in the Territory of Alaska still belonging to the public domain. Some of it is oil and coal land which it has been suggested that the Government keep and lease. Much of it is desert land which will be very productive when irrigated. It is the policy of the Government to allow settlers to "take up" its land. If they build residences and cultivate the soil under the conditions fixed by the law, they receive titles to the land and it becomes their property. Each settler can have only a limited number of acres. Where the soil is fertile, the limit is 160 acres. In desert areas, the settler is sometimes allowed as much as 640 acres for the support of his family.

INDIAN AFFAIRS AND PENSIONS.

The Office of Indian Affairs is very closely related to the Land Office. The land originally belonged to the Indians and, as settlers have pushed into new territories it has become the duty of the Office of Indian Affairs to provide for the Indians and to attend to the careful adjustments of their rights.

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1. Is there any part of the public domain near your home?
2. In what parts of the country are the largest sections of the public domain? Explain why.
3. How can one find out when land is to be opened to homesteaders?
4. How does one secure a homestead?
5. What are the conditions under which a title may be secured?
6. Can you describe any occasions when the Government has opened up great tracts?
7. What is the difference between a Territory and a State in the form of government?
8. What is the history of Alaska? Why is it not make into a State?
9. What does it mean when the Government "withdraws" land?
10. What are the reasons for the decision to hold and lease lands rather than give them to settlers?
11. What is desert land? Where are the greatest deserts in the United States? Explain their existence.

The Bureau of Pensions is also related to the public domain. It has always been the custom of nations after war to give soldiers land as a reward for their services. After every war which this country has waged, great quantities of land have been given to soldiers who have settled there and cultivated the land and built homes.

Not only have our soldiers had land, but the Nation has been generous in payments to soldiers and their wives, until the pension bill of the Nation is one of its great expenditures. The administration of the pension fund is the duty of the Bureau of Pensions.

Omitting for the moment the Patent Office and the Bureau of Education, we have no difficulty in understanding the other divisions of the department as related to the development of the country.

SURVEYS, RECLAMATIONS, MINES, AND PARKS.

Through the Geological Survey the Nation is made aware of its resources. This bureau prepares reports and maps showing the mineral wealth and the forests of the country, its rivers and mountains. Anyone can get these excellent maps and reports from the Superintendent of Public Documents for a small payment which covers the cost of printing.

The Reclamation Service is in charge of the irrigation projects which are making fertile regions out of areas which were formerly unproductive because of lack of rain.

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1. Look up in the histories of the United States what is said about land given to soldiers. What parts of the country were settled largely in this way.

2. Ask some old soldier about the pension system and get him to show you what an honorable discharge is and also some of the pension papers.

3. In the present war Congress has adopted a different plan—one of insurance. Find out about it and discuss its advantages.

4. The matter of pensions has been carried mush further in some countries than it is in the United States. Would it be wise for our country to establish old-age pensions for all kinds of people?

5. Why should a survey of the land and natural resources of the country be called a "Geological Survey"?

6. The officers of the Geological Survey are at this time very largely taken over by the Army. Why does the Army need geologists?

7. In making maps for the war entirely new features of the landscape are asked for by the aviators; for example, they want single trees in open spaces mapped. What aspects of landscapes do you think of importance to an army?

The Bureau of Mines has charge of the mineral interests of the Nation, and the National Park Service superintends those parts of the public domain which have been set aside as the Nation's playgrounds. This service publishes a series of leaflets which tell the traveler how to reach the parks and the rules under which he may ride or tramp and camp there.

HUMAN RESOURCES OF THE NATION.

The Patent Office and the Bureau of Education have to do with the human resources of the Nation. Anyone who can add to the welfare of the Nation by devising a machine which will use natural power to better advantage, or will manufacture raw products into usable goods, finds encouragement in the protection given him by a Government patent.

The Bureau of Education represents the National Government in so far as it deals with schools. In this country the control of schools is for the most part in the hands of the State and the school district. The National Government helps local authorities by collecting information from the schools of all the States and publishing reports on all kinds of school matters. It also gives information to anyone who will write for it. In addition, the bureau has charge of schools and certain other interests in Alaska and allots the funds given to the land-grant colleges.

CONSERVATION OF WATER POWER.

Each of these divisions of the department might be followed in detail, but we must limit the present lesson to one example. Secretary Lane has described the importance of developing the water power of the country as follows: "When Benjamin Franklin

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1. Look up some irrigation projects carried on by the Government.

2. The Bureau of Mines has done a great deal of work in the war on protective masks for gases. Why should that particular service be appropriate for this bureau to render?

3. What are some of the largest national parks?

4. Why is it a matter of national importance that these parks be set aside from the public domain?

5. Why are parks important in cities?

6. How does a patent encourage people to contribute to the good of the Nation?

7. Get a copy of the Patent Office report and describe what you find.

8. With regard to your own school, who is the officer in charge of the finances?

9. Find out about teachers' licenses and about the course of study.

caught the lightning on the tail of his kite, he did a lot of strange things for this world, of which we are only beginning to learn. Among these are the uses to which flowing water may be put. The old-fashioned water wheel, which was the motive power of our early industries, is now converted into a turbine which generates electricity, and this has as great a variety of uses as the muscles of a man's arm or a horse's shoulder. Among the other strange things done by Benjamin Franklin was to give an added and peculiar value to the ledges of granite which confine our western streams and turn them into dam sites, useful for purposes of power generation. How many of these there are on public land not yet disposed of no one knows, but we have several hundred under withdrawal, which should be freed from withdrawal and turned into use just as quickly as possible; for, as the muscle of man or horse can raise a few barrels of water from the well to supply stock or irrigate the garden patch, so can the power of the stream, turned into electricity, be used to raise millions of barrels of water to irrigate alfalfa farms or orchards. And this is now one of the most common uses of electric power in the West, and, in fact, in some of the Eastern States, where irrigation is found of value. The waters that flow down our streams are only a small portion of the rain and snow which fall. There are streams that follow their courses underground just as clearly marked and as valuable, if once discovered, as the streams above ground. And to tap these is a part of making America. Cheap gasoline is doing it in some places; cheap coal in a very few; but cheaper electricity is doing it in a large way.

"Then, too, there is that mystifying miracle of drawing nitrogen from the air for chemical use, which can be done only with

1. Who owns a stream and the power which it can give?

2. Why is a dam necessary in order to get power from a stream?

3. Why is electrical power so important in the development of water power?

4. Why does Secretary Lane emphasize the importance of making power and other resources useful? What are the reasons why use has come about so slowly?

5. Can you think of other ways than Government control by which the community encourages the wise use of resources?

6. The war has made us more fully aware than ever before of the importance of wise and full use of resources. Give examples.

7. What relation has conservation to the number of people a country can support?

8. How does war interfere with a country's ability to support its people?

great power, but is being done in Germany, Norway, Sweden, France, Switzerland, and elsewhere; by which an inexhaustible substitute for the almost exhausted nitrates of Chile has been found. This is already a great industry in Europe, and will by necessity become greater in the United States than elsc :here, because of our size and need and opportunity. To increase the yield of our farms and to give us an independent and adequate supply of nitrogen for the explosives used in war, we must set water wheels at work that will fix nitrogen in lime. And there are still more intimate uses for this power—in places in Montana it is so cheap that it operates the churn, the sewing machine, and the vacuum cleaner, and supplies light to the house and fuel to the kitchen range. Indeed for the possible uses of electricity there is no measure."

CONSERVATION AS PROPER USE.

The reason why the Government must take a hand in the development of all these resources is clear the moment one thinks of the matter. It is of vital interest to the Nation that every resource shall make life richer and better. The Nation therefore sets its watch upon that which it has and provides in every case for the best use of its resources. In the Land Office, in patents, in education, and in mines, there is the one motive of development.

This motive is discussed by Secretary Lane as follows: "But in all our giving we have been guided by a purpose—the land that we gave was to be converted from wilderness into homes, or from rock into metal. We gave to the States and to the railroads, with a reservation of minerals. We gave to the homesteader, with a condition—the land was to be used. We gave our swamp lands, but to be reclaimed. We found our coal lands going as farms, and we put a price upon them. We saw our forests being swept clean or monopolized, and we held them out from the mass. Use! Use by as many as possible! The superior use! These were the things we wished and these gave form to our legislation."

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LESSON B–14. THE UNITED STATES PUBLIC HEALTH SERVICE.[1]

In September, when the men for the new National Army were starting for the training camps, a report was received at Washington that 100 men were about to go to a cantonment from a city where a great many people were sick with typhoid fever. Immediately the Federal Government sent to that city one of the laboratory cars which it owns and which it uses in studying and dealing with epidemics in any part of the country. This laboratory car is a fully equipped medical laboratory. It is manned by a group of sanitary experts and their assistants, who can go into any community where there is an epidemic and can study all the sources of food and water from which the disease might come. They can make examinations by the very best and latest scientific methods, because the laboratory on wheels is equipped to do this kind of work. The officers and men in charge of the laboratory are selected for this special service.

PREVENTING AN EPIDEMIC.

In the city just mentioned it was found that the typhoid fever germs came from a water reservoir. Immediate steps were taken to purify the water supply, and the men who had been drafted and were about to go to the cantonment were kept away from the camp until there was no danger of their carrying the disease. Not only was the cantonment saved from the disease, but through the efforts of the Federal Health Service the city itself was helped. The aid of the National Government averted a serious epidemic.

OTHER HEALTH SERVICES.

The work of almost every branch of the Government has something to do with the health of the people. The Army and the Navy both have a corps of physicians who not only treat the soldiers and the sailors when they are sick but also keep them from getting sick. The Department of Agriculture deals with the health of human beings by inspecting meat and by studying food supplies. There are pure-food laws which do much to prevent the selling of impure foods to people who can not discover the im-

[1] This lesson was prepared by John W. Trask, Assistant Surgeon General, United States Public Health Service. It describes one of the branches of the National Government which is concerned with human beings rather than with production and conservation of material things. It is of the highest importance that people be well. There is no more important form of conservation than the conservation of human life.

purities for themselves. There are other branches of the Government also whose work has a bearing on health.

WHY THE TREASURY DEPARTMENT DEALS WITH HEALTH.

There is one part of the Government, however, which does nothing but devote itself to the preservation of health and the prevention of disease. This is the United States Public Health Service.

The United States Public Health Service is a part of the Treasury Department. We are used to thinking of the Treasury Department as having to do only with coins and paper money and with the banks of the country. Let us see by looking into the history of the matter how a branch of the Treasury Department came to have charge of health in this special way.

In 1798, in the early days of our Republic, when most of our commerce and transportation depended upon our merchant marine, Congress recognized that sailors on merchant ships seldom had proper medical care when they were sick on board ship, and if put ashore they were away from home and dependent on charity. As a result, a service was established to give medical and surgical care and treatment to our sailors.

THE GROWTH OF THE SERVICE.

Hospitals and dispensaries were set up in all the more important ports along the Atlantic seaboard and the Gulf of Mexico. The Treasury Department was in charge at that time, as it is to-day of the collection of customs on imports, and all incoming ships were under the supervision of the collectors of customs of this department. Therefore hospitals and dispensaries for the care of sailors were placed under the direction of the Treasury

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1. Sanitary experts are not doctors in the ordinary sense, but are experts dealing with sanitary conditions of cities and larger districts. Go to the health officer of your city and find out from his reports what this means.

2. Why should one examine the water and other supplies in case of an epidemic?

3. How are water reservoirs treated in order to purify the water?

4. What are the conditions that produce impure water supplies?

5. Why should the men from the city be kept away from camp? How long were they to be kept away?

6. It is said that in this war very few men die of disease, while in the Civil War more died of disease than of wounds. What is the difference between our times and 1864 in this respect?

Department. Later, as the country grew, hospitals were established in the ports of the Great Lakes and on the large rivers, and that part of the Treasury Department which carried on this medical work was called the "Marine Hospital Service."

When serious epidemics occurred, and there was need for some one to take charge of stamping them out, the value of the Marine Hospital Service and its trained medical men was recognized. It was given charge of the control of epidemics and the prevention of the spread of disease throughout the country, and its name was changed to the "Public Health and Marine Hospital Service." As years went by, Congress gave it more and more public health work to do, and the name was finally changed in 1912 to the "Public Health Service." It is the duty of this service to work with State and local health officers and to do whatever may be necessary in dealing with health problems too large for the local authorities.

From the earliest colonial days there has been a strong tendency in America for cities, towns, and counties to govern themselves. So deeply rooted is the habit of local government and so well is this habit protected by laws that many State governments to-day undertake very little in the way of control of health conditions. Often they have done no more than make health requirements for the city, town, or county government to enforce. For the most part the State health departments merely help out the city and county health departments in times of emergency. The result has been that the local government has taken care of everything that it could, dealing with most ordinary matters of public health and calling on the State government for help in cases too big for it to handle alone. Where contagious diseases or unhealthful conditions have affected more than one State the Fed-

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1. The Department of Agriculture attends to the health of animals and in some ways to the health of men. Find some examples.

2. What are customs?

3. Look in the general histories and find out about the great plagues which used to spread through Europe and Asia.

4. Why were these plagues more common in earlier days than now?

5. In early days, when sailors took long sailing voyages, the food was such that they were very likely to have diseases that have now practically disappeared. Look in the encyclopedia and find out about scurvy.

6. One of the great discoveries of modern times is a whole series of disinfectants. Find out about some of them.

7. What does it mean to say that we can make a wound septic?

eral Health Service has taken charge of the situation, usually with the help of the State and city authorities. The Federal Health Service in this way represents the interests of the whole Nation. Its work shows how fully we have become aware of the fact that health is a national matter. No individual can neglect his health without affecting the lives of all who are related to him in the community and the Nation.

FIGHTING THE PLAGUE.

An interesting example of the need of a Federal Health Service was shown at the time of the discovery of the bubonic plague in California in 1900. At that time it was known that the plague was carried by rats and other rodents. Men took the disease from the fleas which infest the rats. The local board of health was not able to deal with the emergency. This is the disease that was once known as the "Black death." In various ways, by ships and by freight trains, the rats might be carried to adjoining and even to distant States, carrying the disease with them. To keep if from spreading to the entire country the Federal Government sent officers of the Public Health Service to take charge of the situation and to work with the local health authorities and those of the State of California to stamp out the disease.

YELLOW FEVER AND OTHER CONTAGIOUS DISEASES.

In 1905 yellow fever broke out in New Orleans. The city health department was not prepared to handle a serious situation of this kind and had to ask the Federal Health Service for help. The presence of yellow fever in New Orleans was a matter of the greatest concern to the other cities and States of the country. The disease might spread to all the Southern States, where the

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1. Find out about the health authorities in your town. What are their duties?

2. When there is scarlet fever in a home why is a card put on the door?

3. Some people do not like to have their houses placarded. Are they right?

4. What happens in a school when an epidemic breaks out?

5. In what ways does your school give special attention to matters of health?

6. What part does recreation play in preserving the health of a community?

7. Is an ordinary cold contagious?

8. Why should the National Government not be called on to take care of all matters of health in a community?

mosquito which carries the disease is found. With the help of the Federal Health Service the spread of yellow fever was stopped.

In the same way as in the two cases described the country makes use of this service whenever there is a serious epidemic. If there is an unusual outbreak of diphtheria or typhoid fever or infantile paralysis which gets beyond the control of the local authorities, a request is made of the Federal Health Service, which sends its experts to take charge of the situation.

DESTROYING MALARIA CARRIERS.

If there is malaria in a locality and the people wish to get rid of it, they usually ask the Federal Health Service to investigate and show them the best and cheapest way to stamp out the disease. This is generally done by draining the swamps and accumulations of water in which the anopheline mosquitoes, which carry the disease, can breed. Bodies of water which can not be drained have kerosene oil sprayed on them to kill the larvæ of the mosquitoes.

ADVICE FOR CITY DEPARTMENTS.

If a city wants the best advice as to whether it has a health department suited to its needs, it may ask the Public Health Service to send officers to make a study of the health department and point out the changes that should be made.

INTERNATIONAL QUARANTINE.

Even in colonial days some effort was made at the various Atlantic ports to keep such dangerous diseases as cholera, plague, and yellow fever from being brought in from other countries.

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1. What are lines of connection that would bring the rest of the country into contact with California?

2. Where did the plague come from?

3. What are the conditions that make certain localities in the Orient a menace to us?

4. Can you find out about any steps taken in this country to improve conditions in the Orient?

5. Is American work in other countries justified in any measure by the advantage which we gain from this work?

6. Why did yellow fever threaten us from the Southern States?

7. What is the relation of climate to disease?

8. What relation have these facts had to the migrations of the white race?

However, in 1877 yellow fever got into the country and there was a widespread epidemic. Following this, in the next year, Congress passed a quarantine law, the purpose of which was to prevent the introduction of these dangerous diseases from foreign countries.

In 1892 there was an outbreak of cholera in Europe. It seemed that the disease would certainly be brought to the United States by the passengers or crews of ships. In the next year Congress passed another law for the purpose of keeping out dangerous diseases. From time to time other laws having the same purpose have been enacted. The Public Health Service is responsible for the enforcing of most of these laws. By inspecting and, when necessary, disinfecting vessels on their arrival from foreign countries and by medical inspection of immigrants and crews, it prevents the introduction of dangerous diseases into this country. Inspection of immigrants is also carried on along the land borders of the United States, that is, along the Canadian and Mexican borders. To prevent disease being brought in by the great tide of immigration always flowing to our shores from every region of the world has become one of the great health problems of the country. By the examination of immigrants at the principal ports of Europe and Asia as they are ready to sail for the United States and by inspection also at the ports in the United States at which they arrive, the Public Health Service keeps out the physically unfit and those affected with dangerous, contagious, and loathsome diseases.

INTERSTATE QUARANTINE.

The work of the Public Health Service includes also the prevention of the spread of communicable diseases from one State

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1. How do mosquitoes carry disease?

2. What is the teaching of modern science about the fly as a carrier of infection?

3. What are the methods of exterminating the fly?

4. In the case both of the mosquito and of the fly, methods of extermination try to get at the larvæ. What are the larvæ? How do they live?

5. Note that Congress passes laws regarding health regulations. Find out about some of the local health ordinances and about some of the national laws.

6. "Laws are necessary in order to protect us against our own ignorance." Show how this is illustrated by health laws.

7. Who pays for all the health offices and their activity? Is it a justifiable expense?

to another of our own country. While each State is responsible in a measure for the control of disease within its borders, it is the duty of the Federal Government to prevent the spread of disease from State to State and to protect the country as a whole from dangerous disease conditions which may develop in any one State. With our greater knowledge of the causes of diseases and the means by which they are spread, we know that disease is no respecter of State borders or other civil boundaries. The cases of communicable disease in one State are a menace to neighboring States and to the country as a whole, for, with the rapid transportation and the increased travel brought about by railroads and steamboats, Chicago and St. Louis are to-day in closer association with New York City than Philadelphia was 100 years ago. Diseases are carried by people, and people travel by trains.

HEALTH AND INDUSTRIAL CONDITIONS.

There are other diseases than the communicable diseases in which the Public Health Service is interested. We have come to know that many diseases affect people because of the way they choose to live or because of the way they have to work and play. The conditions in the home, in the school, and in the workshop and office all affect life and health.

Not only have we learned what diseases are and how they may be controlled, but we realize more clearly than ever before that all the members of a community depend very much on each other. The man who is sick is unable to take his part in the work of the community. He may have become sick because of the mode of life which was imposed on him in the shop or factory in which he worked, or by the food which he bought at a public market, or by drinking the water from the public water supply furnished by the city, or by drinking milk produced on a farm where there was

1. What interstate relations other than matters of health are in the hands of the Federal departments?

2. Explain the statement about the association between cities now and 100 years ago.

3. "The railroad is a great menace to public health, therefore no one should ride on the railroad." How can you answer this argument?

4. There are certain diseases connected with certain occupations. Find out about some of them. What is the duty of the city or State in these matters?

5. Certain great corporations have special health departments for the benefit of their employees. Does this pay?

a case of diphtheria or typhoid fever. All these cases show that health is a matter of community interest. If a man can not take care of himself, he must be helped by the community as a whole. Then conditions can be established which will be wholesome and make it possible for everyone to do his work and live in health. When this lesson is more generally learned by communities, the demand for public-health supervision will be even greater than it is now.

THE WAR AND THE TEACHING OF HEALTH.

The war will certainly impress the Nation with this lesson. The education in health matters of the people near the cantonments where the National Army is being trained is one national gain resulting from the war.

When the United States declared war on Germany and began to mobilize its Army, the Public Health Service made investigations of the sanitary conditions about the camps and cantonments. Where there was any need for special control of the sanitary and disease conditions in these areas, in order to protect the health of the troops the United States Public Health Service took charge. In cooperation with the State and local authorities it established model health administration around the cantonments. In some cases house-to-house canvass was made of the homes, giving suggestions as to changes which ought to be made. In this way a knowledge of what is necessary to health is being spread by the Health Service. Indeed, education in health matters is one of its chief duties.

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LESSON B–15. PRICE CONTROL OF WHEAT.[1]

In ordinary times of peace the price for which an article sells depends upon how much there is of it and how much of it people want. Under ordinary circumstances no one pays for air, since it is so abundant. On the other hand, one has to pay for food. In our cities householders have to pay for apples. In years when there is a large crop the price is low. In years of "short crop" the price is high.

Price is a kind of language used by customers and producers. If a man wants something very much, he is willing to pay the price even if it is high. If a producer is very eager to sell, he advertises his goods at a low price. Consumers use this language also to tell producers what to make and bring to market. When many people want a certain kind of apple, the price of that variety goes up and fruit growers, seeing an opportunity to make large profits, plant the trees which yield that variety. Of course, this adjustment of the supply to the desires of consumers is not limited to apples. It is equally true of almost all the articles we use.

PRICES IN WAR TIME.

The world war in which we are now engaged has had very great effects upon prices. Workers who were formerly producing the things we use every day have been called into the armies of the various countries. This has caused ordinary goods to be produced in smaller quantities, and their prices have risen. Then, too, the demand is great because war uses up goods rapidly. Furthermore, there are so many uncertainties in war that neither producers nor consumers know just what to expect, in even the very near future. The producers hesitate to produce in large quantities for fear they may not be able to sell at good prices, and the people who buy are restless and nervous and do not use the price language very intelligently. They are likely to buy for hoarding, to buy on the basis of false rumors, and in various ways to make the price language seem very different from what it is in times of peace.

Industry was much disturbed by this upheaval in prices, and so were the finances of families who had to pay the unusual and uncertain prices. The appeal began to be heard for Government regulation of prices.

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[1] This lesson was prepared by the Public Information Division of the United States Food Administration. It describes one of the activities of the Food Administration. At the same time it gives in a concrete way an explanation of the conditions which lie back of the fixing of prices of commodities.

PRICE REGULATION.

The regulation of prices is, however, no simple matter, and no Government ever undertakes the task without a great deal of study in order to be sure that its steps are wise and just. We can see how complicated the matter is from a study of what has happened during the past few months since our Government began to regulate the price of wheat and bread.

THE WHEAT MARKET OF THE WORLD.

For five years before the war began in Europe the average price of wheat had been about 87 cents per bushel. This price was fixed by the competition between the countries of the world. Some countries, such as England, France, Norway, and Sweden, have to import wheat every year, because they use more than their farmers think it worth while to raise at the usual price of wheat. These countries, which are called "deficit" wheat countries, get wheat from the "surplus" countries, of which the more important are Russia, Argentina, Canada, Australia, and the United States.

THE WAR DISRUPTS NORMAL GRAIN CONDITIONS.

With the beginning of war in Europe in 1914 the usual trading operations and grain movements were greatly interfered with. The grain producing region of Russia is in the "black earth" district in the south, and in times of peace the grain was moved out through the Dardanelles to the deficit countries. However, the Dardanelles were in the hands of Russia's enemies, who would not let the ships go through; so that grain could no longer be sent to market from Russia.

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1. Explain what is meant by the statement that the price of wheat was fixed naturally by the competition between the countries of the world.

2. Where and what are the Dardanelles? Which country controls them?

3. "Wheat is not used in building battleships or making munitions of war. Therefore the war is not responsible for the higher cost of wheat." What do you think of the reasoning in that statement?

4. "The submarine is responsible for the high price of wheat." Explain. Do you agree?

5. Find out what kind of soil and climate are needed to raise wheat and what kind of implements are used.

6. What States produce wheat in this country? When does the wheat crop mature?

The war on the seas made it more and more difficult to send wheat to France and England from the surplus countries, particularly from those which were the more remote. The price of wheat went higher and higher in France and England and Italy and in the smaller countries of Europe, and there was no prospect of relief through raising a great deal more grain themselves, for great numbers of their men had been taken from the fields for the armies.

WHEAT PRICES IN THE UNITED STATES.

Since America, of all surplus countries, was nearest the deficit countries and best connected by shipping routes, it is easy to see that an excessive part of the demand fell upon her. The price of wheat rose in America until by April, 1917, it had reached about $1.80 per bushel, which is twice as high as the average price for the five years just before the war.

After war was declared between Germany and the United States matters became even worse. Before we entered the war German submarines had destroyed many ships and many others had been taken away from peaceful pusuits to carry soldiers and munitions of war. With the entry of the United States into the war and the prospect of shipping American troops to Europe and supplying them with food and materials, the demand for ships grew more urgent. It became necessary to make plans to get wheat to Europe by the shortest possible route.

This, of course, increased the demands upon our grain. At the same time the uncertainties of war made it hard to tell how much our production of wheat would be interfered with. Then, too, it is generally believed that some persons took advantage of the situation in order to make profit and bought up large quantities of wheat to hold for future sales at a much higher price. Certain it is that by May 17, 1917, the price had reached $3.50 per bushel.

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1. Find out what the Department of Agriculture has done to improve the wheat crop of the country. Does this have any influence on the price of wheat?
2. How do the uncertainties of war time upset the system of prices?
3. How is wheat made into flour?
4. Where is the flour of this country made?
5. What is whole wheat flour? graham flour? bran? Of what use is each for food? Is any other use made of bran?
6. Do we send wheat to Europe in its natural form, or do we make it into flour? Why?
7. How do railways and steamships enter into the price of wheat?

CONSEQUENCES OF WAR PRICES ON WHEAT.

Since flour is made from wheat, the cost of flour of course followed the price of wheat. This brought up the price of bread and all the other foods made of flour. Not only so but all the other things that people need for food were affected. Take a single illustration. Rice, which can be used as a food instead of wheat, was produced in somewhat larger quantities last year than usual. When people saw that wheat was getting beyond their purses they began to use rice instead of wheat. This promptly reduced the extra supply of rice and raised its price. In like manner corn began to be used up more rapidly than usual. It is easy to see that the scarcity of wheat meant a general increase in the cost of living.

In Europe, in the meantime, people were obliged to use flour which was coarse or to go without entirely. In July each person in England and France was asked to use only 3 or 4 pounds of wheat flour a week. This means that they were using only three-fifths as much as we use in this country. The privation is harder for them because they depend on wheat flour for food more than we do.

ARBITRARY PRICE-FIXING UNJUST AND DANGEROUS.

In the midst of this increase in prices suppose our Government had said that wheat should be sold for only $1 a bushel. What would have been the result. The people who had wheat and had been induce to raise it by the high prices of the year before would have felt that they were being unjustly treated. Still worse would be the consequences for the year following, for farmers would say that $1 a bushel is so little that they could not afford

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1. What is a grain elevator? What is its place in the production and consumption of wheat?

2. What is meant by the expressions, "the battle of the plow?" "the soldier of the soil?" "the hoe and the bayonet?"

3. Mention as many foods as possible in which flour is used.

4. Why is bread such a staple food? What other foods not made from wheat can take the place of bread wholly or in part?

5. Ask your mother how many pounds of wheat you eat each week. In what is this wheat used?

6. Why can not the Government fix prices on whatever commodity it wants?

7. Home baking is decreasing. Why?

8. What other things besides flour are used in making bread? Do they affect the price of bread?

to plant wheat, and a very serious shortage would occur in the next crop.

But suppose the Government had said that wheat should be sold for $10 a bushel. The results would have been equally serious. On the one hand, it would have been necessary for us to change our diet, because not many of us could afford the usual quantity of bread. On the other hand, the high price would have tempted people to use too much land, labor, and capital in raising wheat and not enough in producing other important goods. Either an excessively low price or an excessively high price is unjust and dangerous.

HOW THE GOVERNMENT MET THE PROBLEM.

What the Government could do without overshooting or undershooting the mark was to try to adjust prices fairly and at the same time help in the proper use of the supply.

The first steps taken by the President were in the direction of education and persuasion. The people of the country were told of the needs of our Allies and of the importance of saving as much wheat as possible. A food administrator was appointed, and he secured from grain dealers an agreement that they would not speculate in wheat; that is, that they would not purchase lots for the sole purpose of profiting by changing prices.

In the meantime Congress was working on a law intended to relieve the situation. One clause in this law promised farmers that all the wheat produced in 1918 would bring them a price of $2 per bushel. The purpose of this guaranty was to encourage production. Its meaning is clearly described by Mr. Hoover, the food administrator, in the following statement:

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1. In figuring the cost of his bread the baker counts the cost of materials, the cost of labor, and the cost of machinery used up. How many of these elements enter into the cost of making bread at home? Should all be counted?

2. What machines do the bakers of your town use in making bread? Some of these machines last for years; how then can the baker include the cost of the machines in the price of the bread? Are there any bread-making machines for home use?

3. The Commercial Economy Board finds that the cost of delivering bread which the purchaser might carry home adds to the cost of the bread. Mention all the reasons, personal and national, why that cost should be eliminated.

With the stimulation of $2 wheat, we are going to have a very much increased acreage in 1918. If climatic conditions are right, we should have 1,000,000,000 bushels. If the war continues, this wheat will be vitally necessary; but if the war should come to an end there will be no foreign market for at least 400,000,000 bushels of this wheat. The Government must then take over the wheat and probably find a market for it at a very great loss.

I should anticipate that the Government may lose from $300,000,000 to $500,000,000 on this wheat guaranty if peace arrives before the 1918 harvest is marketed.

The reason why peace would greatly reduce the price is that the wheat of Russia, India, Australia, and South America could then be carried easily to European markets. Mr. Hoover does not look for an early peace, as he states in another paragraph, but he finds it easy to make clear in such a statement what a Government guaranty means.

Another clause in the law passed by Congress gives the President power to organize a wheat purchasing agency which will help to keep wheat properly distributed.

The practical working of this plan is as follows: Under the direct control of the Food Administration, which is the organization that the President has set up to carry out the provisions of the Food Control law, there has been organized a Grain Corporation. This corporation has been given $50,000,000 with which it can buy and sell wheat, distributing it where it is needed. The

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1. How do newspapers help in informing people of the war-time food situation and the program of the Food Administration? How do the moving picture theaters help? What other means of "education and persuasion" has the Food Administration used? Are there any others which could be used? How could such a situation have been handled before newspapers were so common?

2. What is "speculation"? What bad results might it lead to in times of crisis like this war time?

3. Why was it necessary to guarantee farmers a price of $2 for wheat in 1918? Why was such a measure desirable even if the war should be over before the 1918 wheat crop is harvested and marketed?

4. "The $2 wheat guaranty will not increase the wheat crop. Men and farm machinery are necessary." Do you agree? Will the farm machinery be supplied? Is anything being done to insure a sufficient laboring force to handle the wheat crop?

5. Give all the reasons you can why the regulating of wheat prices should be done by the Federal Government and not by State governments.

wheat thus purchased makes a kind of reservoir of wheat in the hands of the National Government. For the period of the war the National Government becomes a very large dealer in wheat and its influence on prices can be used in the same way as that of any other large dealer.

PRICE FOR 1917.

The act of Congress had not set any price for the crop of 1917. A committee was organized in August under the Food Administration to decide what would be a fair price. This committee reported that it found $2.20 to be a price in keeping with all the conditions.

This price can be made compulsory only so far as Congress authorized the Government to step in and actually control selling and buying. Congress has made it part of the law that price fixing should not apply to farmers or to retail dealers. Only large dealers came under the control of the Food Administration. The grain elevators, large mills, and wholesalers were directed to buy at the price fixed and the President, acting through the Food Administration, is able to enforce this requirement with them because he is authorized by Congress to do so.

The action taken served to check somewhat the increase in bread prices that had been going on earlier in the year, but the greatest difficulty in making the price of bread right came from the fact that loaves of bread were so different in different bakeries and in different parts of the country. As a result, customers could not tell whether they were overcharged or not.

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1. What are the advantages of a standard loaf of bread?

2. What are the advantages of wrapped bread? Where is wrapping particularly necessary?

3. The Commercial Economy Board found that one element of waste in bread was the practice of the big baking companies to take back from grocers any bread that was not sold. Did that enter into the price of bread? Is there any other reason besides reducing the price of bread why this practice should be stopped?

4. What is a corporation? How does the Grain Corporation differ from most corporations?

5. Did the advancing price of wheat mean increasing prosperity for the farmers?

6. The price of wheat is stated in terms of money. It has been said that the price of wheat goes up when the quantity of wheat decreases (provided our want remains the same). Would the same thing happen if the quantity of wheat and our demand for it remained permanent and our quantity of gold increased?

Therefore, an important step in price regulation is the adoption of rules setting a definite weight for each loaf of bread. The Food Administration made such rules and required all large dealers in bread to produce loaves according to an adopted standard. The loaf must be manufactured in specified weights of 16 and 24 ounces, or, if large, in multiples of these weights. It must have certain proportions of flour, sugar, milk, and fat.

Other regulations were adopted dealing with the selling of bread. These regulations are designed to see that the bread is delivered to the consumer in as economical a way as possible.

PRICE REGULATION IS NOT PRICE FIXING.

What has been done by the Food Administration can be understood only when we remember that a great many causes enter into the setting of a price. The price tells how hard it is to get the article and how much people want it. Price is not something that can be changed by a mere word, even when that word is spoken by the Government. The Government and the people must patiently go about a study of conditions. One by one conditions must be taken up, explained, and met so far as possible.

The Government can prevent unjust prices in a measure by persuading people not to waste, by adopting standards for what is sold, and by helping in distribution. This is what the Food Admininstration is doing. It can not overlook the conditions which caused high prices and it can not suddenly change these conditions. It can not go into homes or retail stores or the farmers' bins and command prices and wheat. It can only help in the intelligent use of the supply, in the better use of the price language between producers and users, and in the future production of a larger supply.

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LESSON B–16. WHY WE MUST HELP FRANCE.[1]

All Europe is in a state of siege. The armies and navies of the warring countries are straining every nerve not merely to win victories over the armed forces of their enemies but to cut off whole nations from supplies of food and fuel and the material necessary to carry on war. Germany, Austria, and their allies in the center of Europe are surrounded by a ring of enemies who are trying to prevent these central empires from getting the things they need. By way of retaliation the submarines of Germany and Austria are trying to make the ocean impassable, so that France, England, and Italy may be cut off from sources of supply in America, Australia, and India.

SIEGES OF CITIES COMMON IN EARLIER WARS.

History is full of stories of sieges of cities. When the German Army surrounded Paris in 1871 and kept the inhabitants of that city shut up within its walls, starvation soon brought the French capital to surrender. The conditions which resulted from this siege have been vividly described in the stories of the times. The food gave out; sickness and death came to the people until they could hold out no longer against the enemy. With the capture of the French capital Germany conquered the country.

TO-DAY SIEGES ARE DIRECTED AGAINST WHOLE NATIONS.

It was undoubtedly the hope and expectation of the Germans in the early days of this war that they could again capture Paris. But the Battle of the Marne destroyed the hope of victory by the conquest of a single city. As the war has dragged along into years, nation after nation has been drawn in, and to-day the rings of national fortifications in Europe have been drawn tighter and tighter, navies have become more and more keenly watchful, while the war has turned into a siege of nations and a contest in national endurance.

Even the neutral nations of Europe, which would gladly be free from the burdens of war, are hemmed in by great warring neighbor nations and are shut off from supplies and from the commerce to which they have a right. Little Switzerland and Holland have been turned into military camps for the one purpose of keeping

[1] This lesson was prepared by the Public Information Division of the United States Food Administration. By describing in some detail the facts with regard to the privations of France, it aims to serve two purposes: First, it aims to show how destructive war is, and, second, it should stimulate patriotic young Americans to contribute willingly to the efforts of our Government to help France.

out of the war. They are watched on all sides by their neighbors, who give them supplies grudgingly, if at all, and who seize from them every ounce of food and material that can be taken without actually dragging these little States into the war. Never before has there been siege on such a large scale, nor starvation and privation involving so many human beings.

Add to all this the fact that great stores of food have been destroyed as armies have swept over Belgium and Poland, over northern France, over Serbia, Roumania, and northern Italy. These countries have been turned from productive regions into waste territories, and millions of people have been left helpless and starving, dependent on others, and not contributing to the world's supplies.

WE MUST UNDERSTAND THE PRIVATIONS OF WAR.

Some one has said that if all the children in the world could understand how terrible war is there would be no more wars after this, for the memory of suffering would check all desire for conquest. The children of Europe will learn the lesson through their own experiences of hunger and privation. The children in America will learn the lesson directly by reading of the experiences of these European nations.

There is another reason why we should learn this lesson. We are called on to help win the war. Some of us have thought of this as meaning the sending of an American army to France. That we must do. But that is only a part of the contribution we must make. This is not a war of battles merely. Europe is in a

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1. What is the difference between a siege and a battle?

2. What causes a general to adopt the methods of a siege against his enemy?

3. A blockade is the name given to the kind of siege which a navy establishes by closing the ports of an enemy. Find examples in history of blockades and sieges.

4. Find out what the German plans were for a quick victory at the beginning of the war. What prevented the success of these plans?

5. How many nations are now in the war?

6. What are the rights of a neutral country? How are these rights defined?

7. The causes of this war have been described in a number of publications given out by different governments. Find out about these publications and consider what their appearance proves regarding the intelligence of people.

state of siege, and we must send food and clothing to France and Italy and England, where the boys and the girls and the women, as well as the soldiers, are enduring hardships which must be borne patiently if the siege is to be withstood.

FUEL SHORTAGE.

Some idea of the privations of Europe comes to us from our own experiences. Because we do not have railroad cars enough or men enough to do the work which we have to do in these war times we are suffering from a shortage of coal. We are anxious lest we shall not have enough to supply our factories and heat our homes. The coal for schoolhouses is running short. Before the winter is over the situation may become much worse. Yet our suffering is slight compared with that of France. In that country the rich coal mines are in the northern part, which is overrun by the German armies. Therefore France is dependent on other countries to-day for her coal. England has been sending her a little, but the problem of shipping has become so urgent that not much more coal can be sent across the channel. The people of France are ill-clad because their cloth has given out and because many of their own factories have been closed by the war. Coal sells for $100 or more per ton, when it can be had at all. Even the hospitals can be heated only part of the day.

Lack of fuel would not be so serious if people were well fed, because the body can make its own heat, provided there is enough food of the right kind. Food is body fuel. If one eats sugar, one can produce body heat. When food is scarce and fuel is gone, suffering becomes more acute. And in France the food supply is very low.

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1. What kinds of food is it best for us to save and send abroad? Why?

2. How does the destruction of shipping threaten to make us less effective in this war?

3. In connection with our own shortage of coal, review the facts with regard to the interdependence of workers in all industries. How does this shortage affect the manufacturer of cloth and the baker?

4. If the coal shortage in this country becomes very serious, who will have a right to the coal first?

5. Find out the location of the chief coal deposits in Europe.

6. Italy is worse off in the matter of fuel than France. Why?

7. What effect does the climate have on diet? Illustrate from what you know of the Esquimos and also from your experience with diet in summer and winter.

8. What are the best heat-producing foods?

FRENCH AGRICULTURE CAN NOT GO ON.

Let us try to understand why France has only a little food. In the first place, we must think again of the rich northern Provinces which have been overrun by armies. We are told that the very soil of those once fertile plains is ruined. Soil, or humus as it is called, is a thin surface layer of vegetable matter. Through long years of cultivation this humus has been fertilized and enriched so that is can produce abundant crops. The humus of northern France has been destroyed. The bursting shells and the trenches have turned up the lower layers of infertile earth, and it will require a hundred years before the soil of that region can again produce crops. Yet this was one of the richest farming sections of all Europe. Not only has France been cut off from her rich northern Provinces, but she has unsuitable tools and few workers to till the land which is still given to crops.

One traveler, reporting what he has seen, wrote to the United States Food Administration as follows:

LABOR SHORTAGE.

When one travels over France one speedily learns the reason for the shortage in the grain crops. It is because there is not the labor to do the farm work. Cultivation has to be left to the old men, the women, and the children. All others have been taken for the armies and the defense of the country.

In crossing and recrossing the French agricultural regions it has been a continual source of wonder to me how the few workers in the fields have been able to produce the crops they have achieved. One sees plows with the handles held by women and the horses led by small boys,

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1. Find some place where a cut or landslide shows the different layers of earth, and measure the thickness of the surface layer in your part of the country.

2. Find out from war maps what part of France has been involved in the war. Also determine from recent maps what part has been retaken by the French and their allies.

3. Can the part retaken be devoted to the purposes of supporting the nation?

4. How far back of the trenches does an army occupy a country?

5. It is reported that Pershing's army included many railroad men, some of whom were the best railroad managers in this country. Why were these men needed in our Army in France?

6. In order to understand what is meant by these statements about shortage of labor you should find out from some report how much labor is required to cultivate crops. Where can this information be found?

women stooping among the long rows of corn, cultivating the ground, groups of women slowly crossing the fields, creeping on their knees, painfully tending the newly planted crops. Occasionally one sees a white-bearded patriarch among the women. I should say that the proportion is roughly one man to six women. This, however, is by no means an official figure. It is only my own rough guess.

There is no wonder that with this tremendous shortage in labor fields are left bare, while those that can be cultivated produce less than the normal amount per acre. What would our western farmers think of turning the land in the spring with long-bladed hoes? Yet I have seen this very thing done in many parts of France because of the dearth of agricultural machinery.

SHORTAGE OF IMPLEMENTS.

Most of the farm implements of France before the war were of American make. One saw the American mark on the plows and harrows, the rakes and reapers, and binders and thrashers all over France. Since the war much of this machinery has deteriorated sadly, and a great part of it is entirely unfit for use, because there are not mechanics to keep it in repair, and there has not been the importation of new machines and parts to replace the old and worn-out pieces.

France is a country at war, very really and terribly at war. The invader is on her soil. Her mines and furnaces and factories are in German hands. Her richest manufacturing Provinces are held by the enemy. Her men must go to the trenches to defend their country and drive back the hordes from across the Rhine.

SHORTAGE OF GRAINS AND OTHER NECESSITIES.

The result of this shortage of agricultural labor is that France can not raise enough food to keep her people alive. The wheat crop of France is less than half what it usually is. The sugar

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1. Why does inadequate labor produce a small crop?

2. What is the objection to turning the land by means of hoes?

3. Why should the French implements of agriculture come from America? In answering this question, look up the history of the harvester and other such implements.

4. In ordinary times what precautions are taken against the wearing out of machinery other than making repairs when needed?

5. Good business houses count the wearing out of machinery as one of the costs of operation. Why? Should a farmer do the same? Does he usually do so?

6. How much does farm machinery affect the output of the farm?

7. "American homes use more machinery than do the homes of Europe." Give examples of such home machinery. Why do our people use home machinery more than Europeans?

beets which used to give France her supply of sugar are not raised now and could not be manufactured into sugar if they were. And so on through a long list of the necessities of life.

Two passages from another report to our Food Administration tell us what this means:

I have spoken of the scarcity of flour resulting from the shortage in wheat. Let us try to see what this means to France. In the first place, it must be realized that there bread is the staple article of food. It is the base of all meals, especially among the working population. Breakfast consists of coffee or chocolate and bread. Luncheon is bread, soup, coffee, and often, though not always, some meat or fish and a vegetable. The big dish is bread. Bread is again the base of dinner or supper, however the meal may be called. Bread and cheese will make an entire meal for a French peasant, with a glass of wine to wash it down.

If one is keeping house, one finds that one must have a "sugar card," permitting him to buy a stipulated amount of sugar in a month. The allowance is 1½ pounds of sugar a month if three meals a day are taken at home, 1 pound if two meals are taken at home, and ½ pound if only one meal is taken at home. This means for the person who takes three meals a day at home 18 pounds of sugar a year. The annual sugar consumption per person in America is 85 pounds.

It is soon learned also that the "sugar card" does not mean that one can demand a pound and a half of sugar a month, but only that one is permitted to buy that much, provided a dealer can be found who has it to sell. A dealer who has sugar will not sell it to anyone who comes in. He sells only to his own regular customers.

We paid last winter in Paris 11 cents apiece for eggs and $2 a pound for butter and there was frequently neither butter nor eggs nor milk to be had. Private families were allowed to buy one-eighth of a pound

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1. Try to discover where shortages have occurred in our own country during the past years. What are the results following on a shortage? Who suffers first?

2. In spite of the shortage, France keeps the army fairly well fed. Why?

3. If France can not raise wheat, she should borrow money from America and buy what she needs. Discuss this statement.

4. What part of the diet of an American family is bread?

5. The quality of flour used in France to-day is coarser than usual. What part of the wheat do we use in the best grade of white flour?

6. If there were a shortage of flour here, what would we do?

7. In order to understand how the food cards are used in Europe, describe some of the different ways in which ticket systems are used in this country to direct the use of the things we want. Think, for example, of a library card or of a ticket of admission.

of flour at a time. The grocers could not sell flour, only the bakers. The flour mills could not choose their own customers nor could the bakers and restaurants choose the mills they would buy from. Lists were made out, telling each miller to whom he could sell. This was in order that one section should not be able to eat up the stock of flour belonging to another section, or one baker deprive the customers of another when all were short.

SHORTAGE OF MEAT.

Nor is this the whole story of the shortage of food in France. The meat supply is giving out and with it the dairy supply, because the herds of cattle have been killed for food and for lack of the necessary fodder to keep them alive. This shortage will reach far beyond the period of the war, since it requires long years to raise enough cattle for the use of a nation.

Here again the report of an observer in France will help us to understand how the people are suffering.

Cattle feed is short in France, and the cattle are poor and under weight. More of them have to be killed in proportion to supply the needed quantity of meat. Milch cows have been killed and the shortage of proper feed has reduced both the quantity and quality of milk. Why, I have seen the time when it has been next to impossible to get milk for my little baby in Paris. I have gone from store to store, begging some one to sell me as little as 2 cents' worth of milk for my baby.

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1. Mention the various kinds of food secured from herds of cattle.

2. The number of deaths among babies in Europe is said to be very great on account of the shortage of food. Why is a baby more affected by shortage than an adult?

3. Suppose the Government took no hand in controlling the food supply. What would happen?

4. Do you favor the issuing of food cards at this time by our Government?

5. If you answer the above question in the negative, can you think of conditions under which you would change your answer to the affirmative?

6. What can a single individual do in order to help the people of France?

7. France has been chosen as a single example. Can you find what is the condition in England? In Italy?

8. The defeat which Italy suffered in November, 1917, is attributed by some writers to lack of proper food. How could lack of food result in defeat?

9. The morale of nations depends on their food supply. What does this statement mean?

The Government is trying to conserve the meat supply and save the herds now by limiting the use of meat to one meal a day. The endeavor is made to accomplish this purpose by forbidding the sale of meat after 1 p. m. and ordering the butcher shops closed at that hour while hotels and restaurants can serve meat only with the noonday meal.

GOVERNMENTAL FOOD CONTROL.

So serious is the situation in France that it is one of the principal problems of the French Government to get food and distribute it fairly to the people. The sugar cards and bread cards show that the nation has had to take the food supply in hand and watch it as essential to the life of the people.

UNITED STATES FOOD ADMINISTRATION.

Our own Government has organized a department known as the Food Administration, which is working with France and our other Allies in trying to meet their needs. We have more than we need. Our Allies in Europe are under siege, and we must send help. We in this country are not yet called on to submit to restrictions by our Government as drastic as those now in force in Europe. We do not have sugar cards and bread cards, but we are asked to learn about the needs of our Allies in Europe and through voluntary regulation of our diets and through increased production to help them survive the siege.

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Chapter V.

CUSTOMS, LAWS, AND FORMS OF GOVERNMENT.

As the previous chapter dealt with the organization of the National Government, so this chapter is devoted to local government and local laws. There is a marked difference in our system between the kind of laws which Congress enacts and the laws passed by the State legislatures. The reasons for that difference are easy to understand if we know the history of the formation of our Government. When the people of the 13 States united to establish a Nation, they were careful to retain in the States all the powers of government except those which they knew the States could not well exercise separately. Thus it happens that the National Congress deliberates upon matters like the Army and Navy, the post office, the tariff, and international relations; and the State legislatures pass laws that control the dealings of man with men, the public schools, the maintenance of order, and the like.

It is not so in many other countries. The same British Parliament which controls the prosecution of a world war and deals with all the weighty problems of a vast empire, was torn asunder a few years ago over the question whether a man should be permitted to marry his deceased wife's sister. The same legislative body which controls national affairs, also controls domestic relations and local matters as well. A similar combination of functions may be found in most of the parliaments of Europe. It seems strange to us only because we are accustomed to a very different condition, which arose from the fact that ours is a nation formed of many parts, and by them.

The first lesson of the chapter gives a definite historical example of the way in which our local laws evolve from practical custom. The courts, through interpretation of customs, have a large part in fixing the laws of a country; and the legislatures as well as the courts are influenced by customs.

LESSON B–17. THE DEVELOPMENT OF A SYSTEM OF LAWS.

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The laws under which we live and the forms of government which enforce these laws have grown up gradually through long periods of history. This history reaches back in the case of a young country like ours to the earlier periods when European countries were emerging from the barbarous condition, in which the only law was that of military power, into the civilized condition, which recognizes law and order as necessary for the development of community life. Our own American law has its roots in the practices of England. Much of it comes from what we call "the common law" of England. This common law originated in the habits of our English forefathers and in the decisions of

certain courts which the Kings of England set up to settle disputes arising between their subjects. The English common law is nothing more nor less than the explicit formulation by courts and law-making bodies of those customs which the community developed as the means of protecting people and property.

COMMON LAW.

For example, each man's house is his own sacred domain. It may not be entered by another member of the community without the owner's consent. This fundamental principle of English common law is in force to-day and is upheld by our courts. It requires the action of a magistrate to enter a man's house, even if that man is known to have in hiding in his house property which he has stolen. Police may enter the house of a suspected thief, but in order to do so they must have the backing of the whole community in the form of a warrant issued by a magistrate. Against anything but a publicly approved search the common law defends the owner of a house.

When a modern legislature passes a law, this law must not violate the spirit of the ancient rights set up and recognized by common law. The courts will defend the common law even if it is not explicitly reasserted in a modern statute, and modern legislation, even where it deals with situations unknown in earlier times, is guided and controlled by the principles of ancient and well-established custom.

MERCANTILE LAW.

In many cases it is not possible to trace laws to their remote origins. There is one set of laws, however, which has so definite and relatively recent a history that it is possible for us to trace

1. What forms of government are there that differ from that under which we live?

2. Sometimes martial law, as it is called, is declared and takes the place of ordinary law. What are the conditions under which this happens? What is martial law?

3. There is a form of law known as ecclesiastical law. How does this differ from ordinary law?

4. Throughout the discussions of law keep in mind the fact that there are laws which apply to the schoolroom. Are these products of gradual development of customs?

5. What is a search warrant and how can it be issued?

6. What is a writ of habeas corpus and how is it issued?

their official recognition with a good deal of definiteness. These are the laws with regard to mercantile practices, especially those which relate to bills of exchange and other forms of credit paper such as promissory notes and checks.

In the reign of King George II England had grown to be the greatest manufacturing and commercial nation in the world. At various centers great public fairs were held each year at which merchants from all the civilized world came to sell their goods. From these same fairs the foreign merchants carried back the products of English workshops. English merchants went to the fairs held in continental cities, and English ships carried goods to all the countries of the world.

SPECIAL MERCHANT COURTS.

At these fairs questions came up which the local courts could not deal with at all satisfactorily. The local courts which for the most part administered justice among the farming people of the countryside were very slow in their judgments and were guided by the practices and customs of the English communities to which they belonged. The whole system of rural life in England was different from the bustling busy life of the fair. The fair was in reality an international meeting held on English soil. The business of the fair had to be carried on rapidly and with due regard to the habits of all kinds of foreigners who brought with them customs and expectations wholly different from those of the English city or village or rural community.

Out of the need of justice of a type wholly different from that which the local courts could administer grew certain merchant courts. These were held at every fair and were summary in their treatment of cases. They were called "Courts Piepoudre,"

1. What other examples than that in the text can you give of the fact that the community sets aside at times the rights of individulas?

2. Can you connect these examples with the whole discussion of law to show that law is an expression of community interests?

3. What is a mob? What is meant by the term "mob law"?

4. Is it right for a group of citizens to take the law into their own hands?

5. There is a type of law known as international law. Is this enacted by any lawmaking power?

6. How is international law enforced?

7. When is the term "statute" applied to law? Are all laws statutory?

8. What are some of the common forms of "credit paper"?

because justice was administered "while the dust fell from their feet." There was none of the long deliberation which characterized the local courts.

CUSTOMS OF MERCHANTS.

The principles on which these merchants courts proceeded were the "customs of merchants"; that is, they asked in every case what was the ordinary practice and compelled contending parties to accept the usual method of dealing.

Some of the customs of merchants were difficult to understand. For example, any merchant might claim a share in a butcher's purchase if he were present at the time the butcher purchased the meat, provided he offered to pay a part of the purchase price. We find a record of one Nicolas Legge who sued Nicolas Mildenhall, a butcher, for not living up to this "custom of merchants."

We find other curious facts about these merchant courts. At first these courts refused to deal with anyone except merchants. If a man became involved in a quarrel with a merchant, he could escape the judgment of the court by showing that he was "not a merchant but a gentleman." Later the courts found it necessary for the protection of merchants to hold that a gentleman as well as a merchant must pay his debts.

CONTRAST WITH COMMON LAW.

How different the "customs of merchants" were from the customs and laws of England can be illustrated by a single example. If a man bought a horse in an English community and it appeared afterwards that the horse had been stolen by

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1. Why is modern trading not carried on at market fairs as in earlier days?

2. What advantage does a nation derive from expositions?

3. What are some of the most recent national expositions?

4. What were the general historical conditions in England in the time of King George II?

5. Why should local courts be slow? Even to-day courts move slowly. Why is this so?

6. Suppose a foreigner is trading to-day in this country. What are the methods adopted by his own country to protect his interests?

7. Can you see any explanation for the custom described in the text about the butcher's trade? Remember that merchants from foreign parts had to buy food.

the seller, the person who bought the horse could not claim a right to it, because it was a rule of common law that no person may sell what he does not own.

Suppose this rule were applied to the trading in a market. Every time any purchaser tried to get anything in a market he would have to ask whether he was buying from the rightful owner. Traffic would evidently be seriously delayed by the constant suspicion that the person who was selling something did not have a right to transfer the title to what he was selling. The merchant courts took, therefore, an entirely different attitude from the courts of common law. They held that the purchaser of a commodity might assume that the person who had it in hand had a right to sell it. This was the common practice among merchants and was a very much more expeditious way of carrying on dealings than any which would have been possible under the common law.

LAWS AS OUTGROWTHS OF CUSTOMS.

The examples which have been given up to this point ought to serve to teach two impressive lessons. The first is that law grows in many cases out of custom. Whether the court is dealing with common law or merchant law, it is evident that in both cases it is the practice of the community which the court is enforcing. The court therefore originates the law only in the sense that it attempts to interpret the practices of the community and to enforce what has been the previous practice.

The second important lesson is that systems of law may grow up in accordance with different types of needs. The law of the merchant was different in its character from the law of the community. The reason for this difference is in many cases perfectly

1. Laws must be particularly strong to protect traders against fraud. Show how the Government takes special precautions to make money of all kinds safe against fraud.

2. How does the law protect the receiver of a check? How does the receiver of a check help to protect himself against fraud?

3. Mention some customs which are practiced in the community which have never been enacted into laws.

4. There are rules of the family which the city and State do not lay down and others which the State sanctions by law. Give examples of each kind.

5. Who makes the laws of a school?

6. Who makes the laws that govern the players in a game?

clear the moment we consider the difference between the two types of transactions.

CONFLICT BETWEEN MERCHANT LAW AND COMMON LAW.

A little consideration will prepare us for the third important lesson with regard to the origin of laws which comes from a study of the later history of the common law and the law of the merchants. It was quite possible in the early days when government was somewhat haphazard for courts of different kinds, governed by different sets of customs, to administer justice side by side. But as government grew more stable and as it aimed to control community life in all directions, the different kinds of law had to be brought together and made part of a single general plan of government. In other words, common law and the law of the merchamts could not forever remain separate and contradictory.

In the latter part of the sixteenth century and the beginning of the seventeenth the special courts for merchants began to die out and the cases all went over to the King's courts which administered the common law. When a merchant's case was thus taken up by one of the King's courts, the effort was made to settle matters according to the customs of the merchants. The result was that cases were referred to the juries without any instructions from the judges as to the law. The judges recognized the fact that their own training in the common law did not prepare them to give juries instructions about the customs of the merchants; so they turned the whole matter over to the juries to decide. The jurors in turn usually knew little or nothing about the customs of merchants and rendered judgments which exhibited little sympathy for these customs.

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1. A constitution is a means employed in a modern State to unify all the laws. Find out what a constitution is. Find out the difference between a written constitution like that of the United States and an unwritten constitution like that of England.

2. What is meant by the statement that a law is unconstitutional? Who decides?

3. What is a jury? Who sits on the jury and why is trial by jury regarded as fairer than other kinds of trial?

4. What are some of the kinds of trials which must be before a jury?

5. There are special kinds of courts in our own day which try to get special information about particular kinds of cases. Find out what a juvenile court is.

MERCHANT LAW BECOMES PART OF GENERAL LAW.

The difficulties were ultimately cleared up by the wise policy of Lord Mansfield, who became chief justice of England in 1756. He saw that the customs of merchants must be respected and that at the same time they must be brought into harmony with the general law of the land. He accordingly began to direct systematically the action of the courts under his charge to this end. In the first place, he selected jurors for the cases involving merchants' rights with a special view to getting as much sympathy as possible for the ancient customs of the merchants. He saw to it that all cases of that type were referred to these special jurors. At the same time he used these people as sources of information on his own part. He got into personal contact with them, engaging them in frequent conversations. Indeed, as one of his biographers tells us, he went so far as to invite them to dine with him. All the time that he was getting information he was explaining the principles of jurisprudence by which the courts ought to be guided.

PROGRESSIVE CHARACTER OF ALL LAW.

Thus, under the wise leadership of the chief justice of the nation the customs of the merchants were gradually worked over into a form in which they could be recognized as part of the general law of England.

Nor did the development of the law of merchants cease when Lord Mansfield was no longer chief justice. From his day to the present, courts have been engaged in finding out for each trade and each kind of business what are the best practices. Many a case comes up in all the courts which is not covered by any statute passed by the lawmaking branch of the government. It is the duty of the court in such cases to attempt to adjust matters in terms of the customs of the trade and in conformity with the spirit of the general law of the land.

When a certain problem has come up again and again in the courts, the attention of the lawmakers is commonly called to

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1. History gives good examples of laws which are not enforced. Find out what "blue laws" are and why they were allowed to fall into disuse.

2. What is meant by the repeal of a law?

3. Can you find out about any law in your own town which is not fully enforced? What about the game laws of the country or the laws about street peddlers in the city?

the need of a specific pronouncement on the matter in the form of a statute or a law. This law in turn is no arbitrary treatment of the cases, but follows as closely as may be the practices of the trades and the judgments of courts. If the law attempted to ignore the whole body of accumulated experience, it would disarrange business and because of the lack of sympathy of those to whom it applied it would lack support. When, on the other hand, a law is formulated with regard to the experience of interested parties it will probably be just, because in the long run only just relations survive. Furthermore, it will be easy to administer because it will follow the lines of well-established practice.

LAW AS A FORM OF SOCIAL ADJUSTMENT.

We see, accordingly, from this clear historical example the justification for the statement that law grows out of practical adjustments. First, men work out certain customs in their efforts to deal with each other. Second, these established practices are applied to difficult situations by courts. In the hands of the courts customs receive public recognition and sanction. Finally, the decisions of the courts are brought together into systems of laws and are adopted by well-established governments as statutes or explicit written laws.

Of course there will always remain spheres of community life in which the rules of conduct are not fully laid down. Laws are always in process of formulation. There will always be court decisions which are taking up customs and giving them recognition. Thus community life is always moving forward and furnishing in new customs and new court judgments the basis for new laws.

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LESSON B–18. HOW STATE LAWS ARE MADE AND ENFORCED.[1]

A group of people who lived in one of the cities of the United States were discussing the board of education which had charge of their schools. The board had refused to furnish medical inspection for the schools, saying it was too expensive, and had refused to rent a school auditorium to an association of citizens for a public lecture. "The board of education does not represent the city and we ought to change it altogether," said one of the members of the company. "But we can not get rid of this board; it is appointed by the mayor and has power over the schools," came the reply. "The real trouble is that the board is much too large; its members do not take their duties as seriously as they would if there were fewer members on the board," was the judgment of another member of the company.

They decided to try to bring about a change in the size of the board and in the way its members were appointed. They thought it would be better to have the members of the board elected by popular vote rather than appointed by the mayor.

SCHOOL BOARDS CREATED BY STATE LAW.

When these people started out to get the board changed, they learned a great deal about the way in which laws are made and changed, and they were a great deal wiser about the way in which their city is governed.

They found, in the first place, that there was a State law which created the board of education and described its rights and duties. This State law gave the board, as the head of the school system, certain powers which make it quite independent of the city government. They learned also that not only the board of education but all branches of the city government are created by State law. The city has no governing powers except those granted to it by the State. Nor does the board of education have any powers except those given it by the State. Education is therefore a State matter referred for management in given localities to a board or committee created to do the State's work. The State law about the board of education applied to all other cities of the same class in the State; so our reformers secured

[1] This lesson was prepared by Glenn Edwards, executive secretary of the Public Education Association of Chicago. It aims, through the study of a concrete case, to show how a State law is enacted. The structure of the State government is revealed by this description of its law-making and law-enforcing activities.

the help of some people in the other cities, thinking that it would be best to get as much cooperation as possible.

THE DRAFTING OF A PROPOSED LAW.

What they had to do was to get the State law changed. A member of the State legislature who was elected from their city agreed to help them. He told them that they ought to write out very carefully a statement of what they wanted and then let him and some of the lawyers in the city rewrite it in the form of a proposed law. This proposed law he said he would introduce as a bill at the next meeting of the legislature. He said:

> But you know I am a member of the lower house, or house of representatives. You had better make arrangements with some member of the upper house, or senate, to introduce your bill in the senate also. It is not necessary to have the bill introduced in both houses, for if it passes one it will be sent to the other. It will be taken care of more quickly, however, if it goes into both houses. Be sure to have the bill in my hands early, because, as you know, after a certain date no new ones can be brought in.

After many conferences a bill was prepared which represented the wishes of most of those who were interested. It is not always true that bills grow out of such conferences. Sometimes they come from one person, sometimes from a member of the legislature; sometimes the governor sends a message to the legislature calling attention to the need for a law.

THE FIRST READING.

The legislature was not in session when the bill was first drafted, but as soon as it met the representative who had promised to

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1. The criticism that public officers do not represent the people is sometimes heard. What is meant by calling our government a government by representation? Who elects representatives? What other representative bodies can you mention in your town or State besides the school board?

2. Who is the mayor in your city or in the city nearest to your school? When is he elected?

3. What is the size of the school board or committee in charge of your school?

4. How are the members appointed or elected?

5. What advantages would there be in electing members to a board rather than having them appointed? On the other hand, what advantages are there in having members appointed?

help introduced the bill. Its title was read; it was given a number and was ordered to be printed. It is the practice of legislatures nowadays to print bills rather than have them read aloud in full. It would consume too much time to read all bills before the legislature. The phrase "first reading" is used for the presenting of a bill. This phrase goes back to the days when it was read aloud in full.

THE BILL REFERRED TO A COMMITTEE.

The bill about the board of education was referred to a committee of the house of representatives at the same time that it was ordered printed. It has become necessary to refer bills to committees because of the great number of bills presented to legislatures and because committees are supposed to be made up of men especially interested and qualified to pass on certain kinds of bills. In this case the bill was referred to a committee on schools. This committee receives all bills relating to schools and studies them while other members of the legislature are studying bills on roads or banks or other matters.

The bill could not be made into a law at the first reading, even if everybody was in favor of it. The rules of the legislature require that the bill shall come up for second and third readings. The rule makes it certain that there will be full debate and gives anyone who is opposed to the bill time to make his objections known.

Referring a bill to a committee also helps to make it certain that the matter will be carefully considered from every possible

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1. How often does the legislature of your State meet?

2. Find out what requirements must be fulfilled before a man can be elected to the legislature. Are the requirements the same for the two houses?

3. Who can vote for legislators?

4. In how many States in the Union can women vote for legislators?

5. Find out how legislative committees are made up.

6. By reference to a book of parliamentary rules find out the difference between standing committee, committee of the whole, and special committee.

7. In an ordinary meeting what precautions are taken to insure complete consideration of a motion before it is voted on?

8. What is the chairman of a meeting? Who are the chairmen of the two houses of the legislature?

9. "Parliamentary law is made for the protection of the minority." What does this statement mean?

point of view. Each committee goes over, in connection with each bill presented, all related matters which come before the legislature at that session.

It often happens that a bill gets no further than the committee. The members of the committee see that the bill is not wise, or they think that it ought not to pass, and so they take no action and the bill never is heard from again., A great many bills disappear in this way, by failure of the committee to act. They are said to be pigeonholed or buried in committee.

A COMMITTEE HEARING.

In the case which we are following, the committee on schools saw that the bill referred to them was important and set a day to discuss it. They let the friends of the bill and those who were opposed to it know that they would take up the debate on the bill on a certain date. The meeting of the committee was public and was called a "hearing." At this hearing various people spoke for and against the bill, and the members of the committee asked questions and expressed their judgments.

In the course of the hearing it became evident that the bill would be improved by adding certain paragraphs, changing certain words, and leaving out certain parts. These changes, which are called amendments, were voted on by the committee and it was decided to recommend a number of them to the legislature.

These changes were made by the committee in spite of the fact that the friends of the bill were sorry to see some of them made. Those who had prepared the original bill could not control the action of the committee. Only members of the committee could vote on the amendments.

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1. Is it just for a committee to suppress a bill?

2. In the case of a committee hearing the ordinary citizen has an opportunity to be heard. Can a citizen appear on the floor of the legislature and take part in debate?

3. What is the right of petition and how is it exercised?

4. How are amendments made in an ordinary meeting? Why does parliamentary law put restrictions on the number and form of amendments?

5. What is meant by the word "filibuster"? Is it right for the minority to filibuster?

6. Bills are sometimes changed in passing through the legislature by the addition of what is called "a joker." What is a joker?

THE SECOND READING.

After making the amendments and discussing the bill, the committee voted to recommend the bill to the house of representatives for favorable action. On hearing this recommendation the house gave the bill a place on the calendar; that is, it was agreed that at a certain time it should have a second reading.

When the time came for the bill to be taken up according to the calendar, the number and title of the bill were read; members of the house got out their printed copies and a general discussion began. Several members of the house asked questions and some speeches were made "on the floor," that is, by members. Amendments other than those reported by the committee were proposed and some of them were adopted. The bill in its revised form was now sent back to be reprinted, so that it might come up at a later date for its third and final reading.

Some of the amendments improved the bill; some did not improve it but were accepted by friends of the bill because certain legislators said they would vote against it if the changes were not made.

THE THIRD READING AND CONFERENCE.

At the third reading the bill passed. The speaker of the house signed it and it was sent to the senate. In the senate the same bill had been making progress, but the amendments adopted in the senate were not like those which had been passed in the house. Therefore, the bill with its two sets of amendments was sent to a committee called a conference committee made up of members of the house and members of the senate. The conference committee studied the various amendments and decided on a form for the bill which seemed acceptable all around.

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1. What is the meaning of the word "lobbying"?

2. All through the discussion of a bill changes have to be accepted in order to satisfy the majority, or secure enough votes to pass it. What is meant by the statement that our Government is a government of majorities? What other kinds of government are there?

3. While considering State legislatures and their action, consider also the National Government. What is the law-making branch of the National Government?

4. How is this law-making branch of the National Government elected?

5. How many ways are there of voting on bills in legislatures and on motions in ordinary meetings?

All this debate and comparison seemed very tedious and useless to some of the friends of the bill; but a law, when it is once enacted affects so many interests that there can hardly be too much deliberation in getting it into the best possible form. The whole organization of the legislature is intended to secure full representation and consideration of all possible interests. The members of the two houses are chosen by different parts of the State. They are mature men chosen by the people in their districts. They are divided into the two houses so that they will check each other. Time is taken in putting a bill through so as to insure as full debate as possible. All this is what we refer to when we speak of our Government as a representative or republican form of government.

THE GOVERNOR'S SIGNATURE.

After the bill had passed through the conference committee, it was adopted by both branches of the legislature. It was then sent to the governor. The governor can prevent a measure from becoming a law by vetoing it. Some of the citizens who had been opposing the bill asked the governor not to sign it. They said that if he would hold a hearing they would appear before him and would give their reasons for thinking that the bill was not a good one. The governor set a date and again the friends and opponents of the measure appeared to argue for their positions.

If the governor vetoed the bill, there would still be a way of enacting it into a law. A two-thirds vote of both houses of the legislature could pass it over the governor's veto, but everybody knew that it was not likely that the legislature would supply such a majority to override the governor. It turned out in this case

1. Suppose a law is passed hastily or is for some other reason allowed to go through with serious defects. What can be done?

2. The cost of the discussions which precede the passage of bills is large. How does the State pay for these discussions?

3. We use various names for our Government, sometimes speaking of it as a republican government, sometimes as a democratic government. What do these names mean?

4. What qualifications must a man have to be governor?

5. Who votes for him?

6. No officer in the United States has an absolute veto. What is an absolute veto and where in the world does it exist?

7. What happens if the governor does not sign or veto a bill?

8. Does the president of a club have the power to veto the motions carried by the club?

that the governor was satisfied with the bill in the form in which it came to him. He signed it and it became a law.

The law reduced the number of members on the board, but did not provide for their popular election. It provided that the mayor should appoint the members with the approval of the common council. This is the method which the State often adopts for appointing a board. Once the board is made up, the mayor and the council do not control its educational policies. The board has rights and duties of its own directly under the State law. The friends of the plan for electing the board were much disappointed that the appointment was left with the mayor, but glad that a change in the number had been made, and set about trying to get the mayor to appoint the kind of people whom they approved.

DELAY IN EXECUTION AND COURT ACTION.

The mayor delayed for a long time the presentation of new names to the council. During this interval the old board continued to hold office. Matters drifted along in this way until finally the friends of the law grew impatient and presented a petition to one of the State courts asking for an order to compel the mayor to do the one thing that he should do in the matter of schools, namely, appoint the board and so put the new law into operation.

DIVISIONS OF THE GOVERNMENT.

This stage of the case shows very strikingly that there is a difference between passing a law and putting it into effect. The fact that an appeal was made to a court also brings our attention to the importance of the judicial branch of the Government. The

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1. Mention a number of public officials whose duty it is to execute the law.

2. In an ordinary club who are the executive officers?

3. Judges in the courts are not expected to take as active a part in party politics as other officers of the Government. Why should this be done?

4. There are certain courts which are called supreme courts. What does the word "supreme" mean in this case?

5. The powers of a city council are limited by the city charter which is granted by the State. Can you think of reasons why a city council should be limited in its powers and subject to State legislation?

6. What is the difference between the powers of a city government and those of a village government?

legislature is the lawmaking branch of the government. Secondly, there are certain officers, known as executive officers, who are charged with the duty of setting the laws in operation. Finally, there is the judiciary, or the courts, which can be appealed to whenever for any reason the law does not operate smoothly. In fact, the courts often aid in executing the laws, and by explaining the meaning of laws they enlarge the law itself.

No government could be complete without lawmakers, executives, and judges. Indeed, the important fact about a law is not that it is enacted, but that it is put in operation and kept in operation. It is interesting to note that the execution of the State laws about schools is a duty of the board of education and its officers. The city government in its other departments is often separate from the school district which is set up in a city by State law.

NATIONAL LAWS AND CITY LAWS.

The account which has been given of the way a State law is passed could be paralleled very closely by describing the way in which laws are made by our National Government and by our city governments. The Nation has two Houses of Congress which act in much the same way as the two houses of a State legislature. The President of the United States has the power of veto over the acts of Congress. It is also his duty through the executive departments of the Federal Government to enforce the laws passed by Congress. There are Federal courts which pass on those matters which come up under national laws.

Most cities have a mayor who has the power of vetoing the ordinances passed by the city council. The city council is somewhat like the State legislature, though it is not ordinarily divided into two houses. There are municipal courts which take up minor suits. City government is much less uniform than the government of States. It is not possible, therefore, in this case to make as general a statement as can be made with regard to the governments and lawmaking activities of States and of the Nation.

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LESSON B–19. THE COMMISSION FORM OF CITY GOVERNMENT AND THE CITY MANAGER.[1]

Americans have been aware for a long time that their city governments in many instances are not doing the business of the city very successfully. Sometimes elected servants have proved to be both incapable and dishonest. Money has been collected in taxes and disappeared like water in the sand; police forces have been clumsy, and have even made alliances with the enemies from whom they were sworn to protect the city; crime has been made a source of profit. Health departments have been lax and ignorant, and have in some cases even turned aside from the warfare on preventable disease and death in order to favor powerful friends or punish enemies. Streets have been ill-paved and dirty, though enough was paid for good and clean ones. Overcrowded and unwholesome tenements were allowed to go up where, in spacious America, they need not have been. As a result of insanitary conditions, thousands of little children have died who might have lived. Street railroads and gas companies and water companies and electric light and power companies have been allowed to give too little service for too high a price. Public officers, chosen to do the city's business, have turned to serve themselves or the political machines to which they belonged. People in city after city have seen these things and were angry; but it was not easy to know what to do about it.

SPASMS OF REFORM.

What people did was natural enough. They let their indignation smoulder until it got too hot to restrain or until some especial scandal brought matters to a head. Then there was a "reform campaign," they raised the cry of "turn the rascals out!" and, partly or completely, swept the offenders out of office. Satisfied with their success, they went back to their private business and sooner or later awoke again to find the old powers reestablished and the old muddle resumed. So it has been in New York and Philadelphia and Chicago and scores of smaller cities.

DISCOURAGEMENT AND ABANDONMENT OF REFORM.

Many who considered themselves good citizens became discouraged and gave up the fight. "All politicians," they said,

[1] This lesson was prepared by Frederick D. Bramhall, instructor in political science, University of Chicago. It shows how the tendency to simplify city governments has spread and how as a result new forms of city organization have been worked out.

"are rascals. What is the use of taking time and trouble to try to win an election? Elections are sham battles between Tweedledee and Tweedledum. We shall mind our private business and let politics alone." So they stopped voting; and if they wanted a service from the city, they often got it as it seemed easiest to get it, without being too particular about the means; and if they wanted to be let alone, they arranged in the same way to be let alone. In this way they helped to support bad government for themselves and the rest of us, although they still often denounced corruption and ignorance among voters and still considered themselves good citizens.

THE CAUSES OF FAILURE.

Many others, however, were not content to let conditions stand or merely to change them temporarily by short-lived reforms. If city government was generally so poor, was it because human nature, our American human nature at least, was corrupt? Or was it, perhaps, because the kind of city machinery of government we had was more than human nature, either in its officers or in the voters, could be expected to manage?

The more intelligent men studied our city governments the more they came to the conclusion that the form of organization of these governments is too complicated and involved; that it is doubtful whether even men of extraordinary ability can make them work smoothly. The difficulty is so great that under ordinary circumstances men of large ability are unwilling to sacrifice themselves in so hopeless and thankless a task. Beyond that it is impossible to expect the voters to keep watch successfully over so loose-jointed a system, with so many separated parts and dark corners.

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1. Give examples of criticisms that you have read in the papers of city governments.

2. Should these criticisms when seen in the papers be accepted as always true?

3. Newspapers are usually affiliated with some political party. Are their criticisms of city government in anywise influenced by this fact?

4. Cities frequently have difficulty in getting the best citizens to become officials. Show some of the reasons why this is so.

5. What is the organization of the police department, the health department, and other subdivisions of the city government?

6. Explain why insanitary conditions and bad tenements appear in cities, since it is well known that they are undesirable.

A very large part of the trouble grows out of the fact that we are unwilling to trust with power those who govern. All sorts of checks and balances have been set up. We have in our cities large city councils, made up of aldermen elected from small wards. In some cities we even have two councils checking one another. We have a mayor, elected by the people, and in most cities a series of heads of departments also elected by the people, or sometimes appointed by the courts or by the governor. The mayor does not guide the council and the council does not control the mayor. The departmental officers are handicapped and discouraged by lack of harmony and cooperation; and the voters are confused and discouraged by too many separated officers and the want of anyone to hold definitely responsible when the common business is mismanaged. It is largely because of this confusion and discouragement that it has been so easy for political machines with skillful professional politicians to weather storms of reform and come back serenely into power when the storm is over.

NEED OF SIMPLIFICATION.

Careful students of the situation who had studied these complications began some years ago to advocate changes in municipal government with a view to making these governments simpler and more direct, easier to work and to understand. All over the country people were beginning to believe in simplification and to ask themselves how this could be brought about.

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1. If a merchant wishes to store some of his goods on the sidewalk, how does he get permission to do it? What unwise methods of securing this permission are sometimes adopted?

2. If a builder wishes to unload his material in the street in front of the building which he is putting up, how does he secure permission to do this?

3. Whose duty is it in a city to see that furnaces in houses and factories do not give out excessive smoke?

4. Is it right for a family which has a contagious disease not to report this because the family will be quarantined if it reports?

5. If an individual citizen sees his neighbor doing something that he ought not to do, is it as much his duty as it is the duty of a public official to deal with the matter?

6. How can an individual citizen properly deal with the failure of his neighbors to comply with the law?

7. What are some of the conditions that tend to make modern city government complex?

GALVESTON.

Just at this time, the hurricane and tidal wave of September, 1901, nearly swept away the city of Galveston, on the Texas coast. When Galveston found itself in ruins, its people decided that there was no time or energy to waste over its old bad government. Things must be done energetically and honestly. They induced the Texas Legislature to provide, for the time being, that the city should be governed by five men consulting around one table. These men were, after the first few weeks, to be chosen by all the voters of the city, so that the best to be had could be chosen. Ward lines were abolished. That was all. There was no separation of powers, no checks and balances, no confusion, no uncertainty. If a thing were to be done, these five men had power to do it; if a thing were done badly or left undone, these five men were responsible. It was simple.

Moreover, it worked. The rebuilding and government of the city were done honestly, intelligently, vigorously. Galveston decided it did not want to go back to the old system. Other Texas cities begged for the same plan of government, were given it, and liked it. All over the country, people who had been thinking of simplicity looked at the Texas cities and instead of saying, "It might be done," began to say, "It has been done," and to urge a trial for the commission plan of city government.

THE DES MOINES FORM OF COMMISSION GOVERNMENT.

The commission plan spread slowly, northward and eastward. In 1906, the city of Des Moines, Iowa, adopted the plan with

1. What are the qualifications required of a man who becomes mayor?
2. What is the length of the mayor's term of office?
3. In your city or town what public officers other than the mayor are elected directly by the people?
4. One frequently reads of a political boss who is not an elected official. How does such a boss get his influence in a city government?
5. What is a tidal wave?
6. Emergencies always bring out the difficulties in any governmental plan. Show how the war has served to suggest reforms in the government of this country and other countries.
7. What cities near your own home have the commission form of government?
8. In the cities which are near you but do not have the commission form of government what is the organization of the city?

some new features which attracted fresh attention and helped very much to spread the scheme. These new features were meant to make sure that the all-powerful commission of five men should not forget that the government belonged to the people of the city. In the first place, the commissioners were to be chosen without the help of the political parties; neither on the primary ballot nor on that of the final election was any party name to be printed. Next, they could be removed from office by the voters at a special election called by popular petition. This is known as the recall. In the third place, their acts could be vetoed by a majority of the voters whenever a small petition asked for the opportunity. This is known as the referendum. Finally, if the commission refused to take action which the voters wanted, they could by petition put such action upon a ballot and enact it themselves at an election. This is known as the initiative. These four new features—nonpartisan elections, the recall, the referendum, and the initiative—changed the Galveston plan into the Des Moines plan.

Many who had been afraid of the great powers which Galveston had put into the hands of its small commission felt that Des Moines had made them safe and democratic. The plan made rapid progress from the Atlantic coast to the Pacific. At last many cities which had been floundering in the old confusion found themselves with a plan of government which did not, it is true, guarantee good management, for no kind of organization can do that, but it offered fresh hope and renewed courage.

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1. How does the Des Moines ballot differ from the ballot used at an ordinary election?

2. What is a primary election?

3. The use of the recall is permitted in a number of States not only for municipal officers but for other officers. Find out how the recall is operated.

4. Find out what States provide for the referendum and initiative in matters of State legislation.

5. The recall, referendum, and initiative are sometimes objected to on the ground that they make government less stable and interfere with the authority of the regular officers of the government. The whole matter is a very suitable subject for a debate.

6. Compare the number of cities where this new form of government has gone into operation with the total number of cities in the United States and in this way estimate the importance of the movement. Can the movement be estimated simply in terms of the number of cities that have tried the experiment?

WHAT COMMISSION GOVERNMENT MEANS.

Let us see, then, just what the commission plan had done when after a dozen years some 350 cities had adopted it. Its main service had been in making city government simple and transparent. It had done this by abolishing the large councils with their aldermen chosen from small wards controlled by petty local interests and "ward politics," and had replaced them with a small council or commission, usually of five men, all chosen by the voters of the whole city. These five men acting together had been given the whole power of the city. The power to make local laws and ordinances, to levy taxes, to appropriate money, to spend it, to manage all the various branches of city work, including police, fire, health, parks and playgrounds, streets and public utilities, sewerage, water supply, usually charities and corrections, and sometimes schools. The five men had each some division of these things to look after, but always the final power was in the hands of the five together. There was no separation of powers, no check and balance system. The commission decided what to do and did it—all with the bright light of public attention on them. There were no dark corners, no hiding places.

REFERENDUM, RECALL, AND INITIATIVE SELDOM USED.

Under the Des Moines plan the people kept the power to guide and correct this commission—to undo what should not have been done, to do what was left undone, and even to oust the commissioners if they found it necessary. But it is interesting to know that they have not found it necessary to use these powers

1. What reasons can you give for the desire to eliminate ward politics from city government?

2. What is meant by electing officers at large? Show why officers elected at large are better for a city than officers representing a small district.

3. The text takes the position that a better grade of men can be secured to serve on commissions than can be secured under the older forms of city government. Why should this be the case?

4. What is an expert in any given line? Offer examples other than the examples given in the text with reference to city management.

5. What phases of city government can you think of which require the services of an expert?

6. What kind of mistakes would a council be likely to make if it did not get the advice of experts in managing a city?

7. An expert is generally very expensive. Does it pay to employ experts in the government of a city?

very much. Generally they have found that when their commissioners had power enough to make the position worth while, they could get good men to serve in those offices; and that with their responsibility clear and the public light bright upon them it was safe to trust them to do their best. So the club of the referendum and initiative and the rifle of the recall have stood almost all the time unused behind the door.

The Galveston flood has made its mark on American city government, not only in those hundreds of cities which had adopted the commission plan in full, but also in some hundreds of others which had not gone the whole distance, but had felt the new hope and the new impulse to simplicity and transparency.

DAYTON APPOINTS A CITY MANAGER.

It is a curious fact that another disaster, another flood, brought to general notice a new step forward in American city management. The city of Dayton, Ohio, in 1913 was partly overwhelmed by the Miami River, with great destruction of life and property. Like Galveston, Dayton saw the need of an able and trustworthy government to do the work of rebuilding. The citizens of Dayton knew, of course, of the commission plan; they approved it and went a courageous step further. They said:

> We want the simplicity and directness of that plan, but we want also more assurance of trained men to handle our many kinds of difficult business. To divide this business up among the five commissioners who are not especially trained to these tasks, however honest and worthy

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1. Public officers are usually required to be residents of the districts from which they are elected. What are the advantages of this requirement?

2. If the city manager is brought in from some other part of the State or country, does the city lose the advantages that are sought by the general requirement that elected citizens come from the district itself?

3. In State government the effort is frequently made to introduce what is known as the short ballot. Find out what this phrase means and be prepared to show that the movement for the short ballot corresponds to the simplification of city government which has been discussed in this lesson.

4. What preparation would you regard as necessary for the heads of the various subdivisions of the city government?

5. There must be in the district in which you live, whether it be a city or town, a commissioner of highways or a corresponding officer. What are his duties? What type of training should he have?

they may be, is to keep our city business in the hands of amateurs. We want professionals. We want the best man we can get anywhere to run this city business of ours under the direction of our commission. We want an expert, even if we have to go outside of Dayton to find him. Let us do what a successful business corporation does: Get a trained manager, put him in charge, keep him as long as he does good work, and pay him enough to keep him. Let him hire the men he needs to work under him in the various divisions of the government. Let him define their duties, direct then, and remove them.

So Dayton adopted the city-manager plan which the little city of Sumter, S. C., had already in successful operation and obtained from Cincinnati a trained and tried city engineer to be its manager.

The scheme has worked. It has had the advantages of the commission plan, and it has added to it the further advantage of centering responsibility for good workmanship in a single head, trained to that task and trusted with the tools he needs. Many other cities have already adopted the plan and many more are actively considering it.

Of course we have not got perfect city government yet in any city. One reason why this can not be done suddenly in all cities is that there are not yet enough trained and skillful city managers and trained people who can be appointed heads of health departments, of parks, and police, and fire and street departments. But many cities which felt themselves in the old days of complicated and confused city government in a slough of despond now feel themselves with their new and simple governments on a high road of progress. The old "reform campaigns" which aimed merely at turning the rascals out have now given way in these cities to new efforts for a more simple, direct, and intelligent way of handling city business.

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LESSON B–20. THE CHURCH AS A SOCIAL INSTITUTION.[1]

Sixteen years ago a French explorer dug out of the sand in a part of Mesopotamia where the British armies have recently defeated the Turks the broken parts of a great black stone which had lain buried for hundred of years. The stone was covered with writing, and when the scholars had carefully studied it they found that it was a collection of laws for the Babylonian people. There was also a picture of a king standing before the sun god and receiving from him the book of laws. This king, Hammurabi, lived nearly 4,000 years ago. From the translation of the inscriptions on this stone we know what the laws of Babylonia were at that remote time. The picture shows us the belief of the people that their god had given them their laws and that he expected them to be obedient and to do their duties.

EARLY LAW IS BOTH CIVIL AND RELIGIOUS.

In the same way in the Old Testament there is the narrative of Moses going into the mountain to receive from God the laws which the people were to observe. No distinction was made between laws of the state and laws of God, because it was believed that God was interested in everything that interested men and that he wanted everything in the family, in the community, and in public business to be done right. For instance, there was a law that if a man should build a house with a flat roof on which people could walk he must build a parapet around the house so that nobody could fall off. There was another law that no filth should be allowed to remain about the place, and another that a certain part of every man's property must be given to help the poor. Thus the people had a very simple, common-sense religion, reaching down to the most commonplace affairs of daily life.

Some of the Hebrew teachers of religion of a period much later than Moses gave instructions about the everyday affairs of the people. There was a farmer named Amos who noticed that a great many people had not enough food, although there was plenty in the country. He looked into the matter and found that

[1] This lesson was prepared by Theodore G. Soares, professor of homiletics and religious education, University of Chicago. It shows how certain needs of society which can not be met without cooperative effort and are not provided for by the civil government are met by the church. The church is one of the earliest and most active social institutions, and its influence on community life has been and is of unlimited importance.

certain people were living in luxury, eating the young lambs and the calves, and he told them plainly that their enemies would overcome them because of their injustice. He found some other people who were selling poor wheat and some storekeepers who were using false weights. He told them that God would not forgive such wickedness.

LAW WAS TAUGHT AS A PART OF EDUCATION.

Laws were in early days part of the regular education of children. They learned the principles of religion and at the same time the rules of daily conduct. The family, the religious life, and the governement were indistinguishable. Children were educated at home and by the elders of the community in the religious ceremonials and duties, the latter including civic duties as well. We see an example of this in the beautiful picture by Hoffmann entitled "Christ before the Doctors." It represents a young Jewish boy of 12 years of age eagerly asking questions of the learned old men who had been studying the laws all their lives. This shows us the Hebrew custom that when a boy became 12 or 13 years of age he was considered old enough to take upon himself the responsibility of keeping the laws of his people. Jesus had been brought to the temple at Jerusalem for the ceremony, which is similar to that which the modern Jews observe when boys reach this age. Christians have a somewhat similar practice in connection with confirmation or joining the church.

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1. There are certain other ancient systems of laws which are mixtures of civil and religious law. Look up in the ancient histories references to Greek and Roman systems.

2. What was the Delphic Oracle and what was its influence on the state?

3. Find in the histories of Egypt evidence of the priests having a large influence in the affairs of government.

4. In many European countries there is a state church to-day. Find out about this matter.

5. What are the other great social institutions which society uses to develop and control the community?

6. What are the devices used in present-day society to circulate the kind of warnings circulated by Amos among his people?

7. The newspapers of the country are sometimes referred to as institutions. Is this a proper use of the term?

THE SPECIAL RULES OF CONDUCT OF THE CHURCH.

The church as we know it is separate from the civil government. We speak of it as a special social institution. It is a community of people having the same religious faith organized for the purpose of promoting a certain type of social living. The church sets up certain principles and standards of conduct which its members are expected to observe. While it lays great emphasis upon exact obedience to the civil law, its ethical teachings go beyond what the law of the State requires. Some churches have very definite rules. There are those which refuse to permit their members to secure divorce for causes which the civil law would permit. Others require total abstinence from intoxicating liquors. Others have certain rules regarding forbidden amusements. All churches expect their members to give a portion of their income to religious and philanthropic purposes and sometimes the exact proportion is designated.

The tendency of the modern church is away from definite requirements and in the direction of greater emphasis upon high motive and a free choice of right conduct. It is recognized that the civil law can not go beyond the moral sentiment of the average citizen and can take account of little besides definite acts. But the church seeks to lead its members to go behind acts to motives, and to ask how much ought to be done and not how little must be done. The law can forbid a person's taking vengeance upon his enemy, but it can not prevent his harboring a spirit of revenge. The church seeks to teach men to forgive. The law can punish fraud and perjury, but it can not well punish ordinary falsehood. It can forbid slander, but can not always reach

1. Give examples of the way in which modern communities instruct people in the law.

2. "Punishment is one of the most potent means of teaching obedience to law." Show why.

3. The law does not apply to little children in the same way that it does to adults. Why?

4. What are some of the laws of the school which are entirely different from those of the state or church?

5. What are some of the special laws and rules of the church?

6. In connection with the new National Army there are various religious organizations which provide more entertainment and religious services for the men than are provided by the Army. This is institutional service. Explain the statement.

malicious insinuation. The church is concerned to teach its people that ill will is as bad as ill deeds and that no deed is good except as an outcome of good will.

THE CHURCH AS A SUPPLEMENT TO GOVERNMENT.

Government is constantly seeking to secure justice and equal opportunity for all, but it is very difficult in our complicated modern life. There are inevitably a great many misfortunes and unfair conditions which government is not yet able to meet. Private initiative must supplement the public organization. This gives opportunity for individual charity and for various philanthropic organizations. Among the latter is the church. Its recognition of the principle of human brotherhood leads it to endeavor to remedy the inequalities of our social life by the kindly ministries of its members. Part of its system of religious education is the training of the young people in social service. Thus in many churches baskets of good things are packed and taken by the boys and girls to families who would not otherwise have a festal Thanksgiving or Christmas dinner. Magazines are collected and carried to homes for old people. Flowers are taken from the church to the sick and to the shut-ins. Girls dress dolls and sew for orphans and for children in hospitals. Convalescent patients are taken out in wheel chairs by boys. And in these days of war there are Red Cross work and food conservation work and many plans of patriotic duty.

The adult members of the church undertake similar activities, but very much of their contribution to social betterment is the

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1. If the rules of the church are good, why should they not be turned into laws of the State?

2. Is the law of the State in any way influenced by the activities of the church?

3. "Charity is a method of redistributing the world's wealth." Show, first, some reasons why wealth needs to be redistributed, and, second, how charity does this service for society.

4. "If charity is not organized, it is likely to be unintelligent." Show some of the ways in which organized charity can be more intelligent than purely personal charity.

5. Is giving to those who beg a kindness in every case?

6. What kinds of organized charity work are going on in your community?

7. Does the school furnish an opportunity for redistributing the world's wealth?

giving of money to provide professional workers to do what is needed. Thus church representatives are stationed at Ellis Island to give help and direction to the immigrants. Others are in the juvenile court to take care of boys and girls who need friends. Others seek out friendless orphans and secure for them homes where they may be adopted. Still others organize schools in neighborhoods where there seems to be special need.

RELATED INSTITUTIONS.

An interesting example of the way in which the church is organized to meet social needs has appeared in connection with the war camps. The Young Men's Christian Association and the Knights of Columbus have placed in all these camps wooden buildings which they call "huts," where the soldiers and the sailors can go to get warm, to find writing materials, and to spend their evenings in healthy entertainment. The church has raised $50,000,000 to provide these huts and to employ the secretaries.

MISSIONARY ENTERPRISES.

The church does not confine its operations to our own country, but endeavors to supply any need that may appear in any part of the world. Thus the Jews in the synagogues of America have been raising large sums of money for their countrymen in Palestine who have been driven from their homes by the Turks. In the same way the churches have raised money for the Armenians and the Syrians.

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1. Social institutions supported by the State are paid for by taxation. What is the difference between taxation and contributions made to other types of social institutions?

2. In the example of Ellis Island we see cooperation between the church and the Government. Explain why such cooperation is desirable. Are there similar examples to be found in your community?

3. Higher education in this country was organized through the church and is to-day largely supported by churches. Why should colleges be different in this respect from common schools?

4. What is the institution which ordinarily takes care of children but for which society must find a substitute in the case of orphans?

5. What does our Government do to protect missionaries who go to other countries?

6. What does the Government of the United States do, besides protect missionaries, to help other countries, as, for example, in China and Liberia?

Many countries are backward in the development of medical science. The church very often supplies doctors for needy communities. A peculiarly interesting instance of this enterprise is the adventurous work of Dr. Grenfell among the fishermen of Labrador. He travels hundreds of miles over the ice and snow visiting the sick in that far-away land. Every few years he returns to the American churches to procure more money for his hospital and medicines.

The church has many thousands of medical and other missionaries, sisters of mercy, deaconesses, and philanthropic experts who give their time to various activities for making the world a better place for many people to live in. Millions of dollars have to be raised for these enterprises; so the church undertakes to secure from its members the necessary funds.

SPECIALIZATION OF INSTITUTIONS.

The descriptions of the activities of the church show what is meant by the statement that the church is a special social institution. It is an organization which does an important service for social life. The Government is another organized agency for taking care of many of society's needs. But the Government does not do everything. In our complex modern life there is a clearly drawn distinction between what the church does and what the civil government undertakes. The rules of life and the activities of society were in earlier centuries united, so that religion and civil law and personal morality were all dealt with through the single social organization which included every interest. To-day there is one type of organization for civic matters, another for religious, and many other organizations such as the family and

1. Look up the work of Dr. Grenfell and report on the conditions in the country where he works.

2. Why did Livingston undertake the exploration of Africa?

3. Have explorers always been missionaries?

4. There are medical institutions in our own country as well as abroad which are maintained by charitable organizations. Find out about some of these.

5. Why is life to-day to be described as more complex than in former times?

6. What is the difference between a modern Sunday school and the Sunday school of Puritan times?

7. In our country the decision was reached long ago that the public schools should not teach religion. Can you tell why this decision is wise?

voluntary associations of various kinds which hold the community together and work out its various interests.

RELATION OF CHURCH TO EDUCATION.

There is one very striking characteristic of the church as an institution which distinguishes it from the civil government. The church aims to enforce its principles of conduct chiefly through education. The church has always been and is to-day one of society's chief educational agencies.

The public school is a social institution which the community has organized for the purpose of training citizens. The church has always had close relations with this other educational institution, the school. Both the school and the church teach us that we are all members of a great human society and that each one of us must do his part to make the society prosper. So the public school gives us lessons that help us to be intelligent, alert, faithful, honorable, truthful, useful, and helpful one to another. The church tells us that God is a member of our society, that He is the head, the great father of all. God is trying to make a good world and He needs the help of all good people to make it. The church teaches us how we may work with God to make the world the best kind of place for men to live in.

The material of instruction which the church employs is principally the Bible, the story of religious men and women, the history of the church and of the various religious enterprises. In addition to these, certain simple statements of doctrine are sometimes taught in the form of catechisms. The reason that so much attention is given to the Bible is that it is the great book of religion. It contains many stories of noble lives, many of the greatest expressions of ethical purpose, and many of the finest moral precepts.

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1. Ceremonies are not confined to the church alone, but are frequently organized as a means of making a more striking impression on the public. Give examples.

2. What other types of buildings are planned for the purpose of impressing those who enter?

3. Is the erection of a great corridor in a public building a legitimate way of spending public money?

4. What are mural decorations and where are they to be found?

5. Music has developed largely in connection with religious ceremonials. Can you find out something about music as used by savages and as it was refined in earlier years of church history?

6. Music is used wherever large groups of people are to be influenced to act together. Give examples other than the example of church music.

The purpose of these lessons is not so much to teach the stories of the past as to help people by the noble examples of the past to meet the practical problems of life to-day.

WORSHIP AS A FORM OF INSTITUTIONAL LIFE.

One of the most powerful means employed by the church to make its teaching effective is public worship. The solemnity and inspiration of a religious service are calculated to make the worshiper feel very strongly the obligation of a religious life. The worshiper is led to good deeds by the religious motives which are aroused within him. In order that the conditions of worship may be as impressive as possible, the church has adopted certain forms and ceremonies, and it has given these suitable settings in buildings of great stateliness. The most beautiful buildings that have ever been erected have been designed for the worship of God. Man has always felt that there could be no place too good for him to find the divine help which enables him to live his human life, to meet his troubles, and to be cheered by the friendship of God. Sometimes, of course, the house of worship has to be simple and inexpensive, because the congregation is not able to provide a better one. In that case the worshipers feel that the sincerity of their prayer and praise makes even the common little building the house of God.

The church in its worship has certain sacred ceremonials which it has observed for hundreds of years. It has also beautiful hymns and noble music that inspire people as they sing or listen. It has sacred scriptures and prayers that have become dear to its people by long use. It has also certain holy days in the year which it observes with great solemnity and joy. Some of these are also public holidays, like Christmas and Thanksgiving. All these ceremonials, like the material grandeur of the church building, are devices which promote the fundamental purpose of the institution, which is the cultivation of the highest and purest motives of good living.

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Chapter VI.

BUSINESS ORGANIZATION AND NATIONAL STANDARDS.

Other matters in which the National Government is concerned are taken up in this chapter. The people of the American Colonies suffered great inconvenience because of the differences in the standards of currency, weights, and measures that prevailed in the several Colonies, and the need of uniformity was keenly felt. The Articles of Confederation, framed in 1777, the year after the Declaration of Independence, formed but a loose bond of union, for the States were loath to transfer their prerogatives to the Central Government; nevertheless, it was provided that "The United States in Congress assembled shall have the sole and exclusive right and power of regulating the alloy and value of coin struck by their own authority, or by that of the respective States—fixing the standard of weights and measures throughout the United States."

The Constitution followed the Articles of Confederation in this particular; but the Congress has not fully taken advantage of the power thus given. A set of standard weights and measures is supplied to each State, and certain electrical units have been prescribed, but no provision has been made for enforcing the few standards fixed. The State legislatures have gone a great deal further, and naturally there is considerable variation in the laws. The value of the work of the National Bureau of Standards is recognized, however, and its conclusions are generally accepted by common consent even when they have not the force of law. This bureau is an example of Government activities whose work is purely scientific and at the same time is closely related to the life of the people.

LESSON B–21. NATIONAL STANDARDS AND THE BUREAU OF STANDARDS.

Prepared from material supplied by E. B. Rosa, chief physicist, United States Bureau of Standards, and H. G. Moulton, assistant professor in political economy, University of Chicago.

Henry I, King of England from 1100 to 1135 A. D., is said to have established the yard to be used in all measuring in his domain as the distance from the point of his nose to the end of his thumb. Later monarchs of England established other standards. Henry VII had a measure made in 1490. Queen Elizabeth had a measure made in 1588. These two are said to differ from the present Imperial British yard by about a hundredth of an inch. The present English standard was adopted in 1855.

Copies of English standard yards were brought to this country during colonial days. In 1856 the English Government sent to this country two certified copies of the new English standard. One is made of bronze, the other of iron. These served as standards until 1875, when our Government joined with several others

to establish a central bureau of measures and weights in Paris. From this international bureau our Government received standards which are made of platinum. These are carefully guarded at the Bureau of Standards in Washington and are the standards from which all our weights and measures are derived. It is interesting to know that these standards are in the metric units, our own English measures being derived from the metric units in a ratio fixed by law.

EARLY STANDARDS.

The question suggested by these statements is this: Why should it take so much effort and so much time to get people to see the necessity of adopting satisfactory standards? The answer can be found by studying history. There is nothing in nature which men can easily use that is absolutely uniform. They began by using parts of the human body. For example, it will be found that in Deuteronomy II, 5, reference is made to "a foot breadth." The cubit often referred to in the Bible was the distance from the elbow to the end of the middle finger. For longer distances a stone's throw or a day's journey was used. All these early measures were indefinite and variable. One can imagine the disputes that must have arisen when people tried to measure by these crude standards.

The following description of the way in which a definite measure was obtained in the sixteenth century is found in one of the books on surveying:

To find the length of a rood in the right and lawful way, and according to scientific usage, you should do as follows: Stand at the door of a

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1. In measuring land the term "pace" is sometimes used. How long is a pace? What mistakes does anyone make who uses this kind of measurement?

2. There are many common methods of measurements used in practical life which employ parts of the body as standards. Find out about some of these.

3. What is the source of the unit in the metric system? Show the advantage of securing the unit in this way as over against the older method which lies at the foundation of the English system.

4. It has been suggested that the length of light vibrations be taken as the fundamental unit of distance measurements. What would be the advantages of such a unit?

5. What is the source of the units of volume and weight?

church on a Sunday, and bid 16 men to stop, tall ones and small ones, as they happen to pass out when the service is finished; then make them put their left feet one behind the other and the length thus obtained shall be a right and lawful rood to measure and survey land with, and the sixteenth part of it shall be a right and lawful foot.

This account shows one way in which it was supposed to be possible to get away from the use of any particular human foot and to get a fair average of the feet of many people.

Standard weights were obtained with even greater difficulties than measures of distance. Stones and grains and other measures were used. None of these were easily copied. Grains, in spite of the fact that they were much alike, differed somewhat in weight, and this difference was often a matter of importance in weighing valuable materials like gold. It was not until the common use of metals made it possible to duplicate weights freely that a system could be worked out such as we use now. Our weights are copies of standard weights kept by the Government.

There are other standards, namely, those of volume and of value. Money is an important standard in our modern life. It also is under the control of the Government. Money standards grew gradually from trade in unmarked gold bars and other desired metals.

THE GOVERNMENT MUST SUPERVISE STANDARDS.

The one fact which stands out clearly in all this history is that standards are never fully established until the Government takes a hand in the matter. Individual traders are likely to be selfish

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1. The English standards of measure were destroyed early in the last century. How would a country go about reestablishing its standard if the originals were destroyed by fire, as were those of England?

2. What precautions are taken by society to compel traders to use standard weights and measures?

3. What is the meaning of the statement that money is a standard of value? In some studies of commerce it is found better to use wheat as a standard. Can you explain the reason why?

4. Why should the National Government be put in charge of weights and measures and coins rather than the government of small communities?

5. Find out from some history what was the situation in this country at the time that the Constitution was adopted with regard to weights and measures.

6. Make a list of the ways in which some tradesman, such as a carpenter, makes use of various national standards.

and to try to gain advantages for themselves by adopting weights and measures that favor their side of the bargain. The Government, which is above the individual and which is not working for any particular citizen, finally steps in and sets the standard.

It is this reason which explains why the Constitution of the United States provides that Congress shall have power "to coin money, regulate the value thereof, and of foreign coin, and fix the standard of weights and measures." There is, perhaps, no single power of our National Government which brings it into so intimate daily contact with the life of the people as this power of fixing the standards of measurement. Anyone who buys a yard of cloth or a pint of milk, anyone who pays for the necessities or luxuries of life in coin carrying the Government stamp is using a public standard of measures established by our National Government. Not only so, but the Government is prepared to enforce its standards, so that no one may reduce or increase the measures established.

The result is that everybody does his private calculating as well as his dealing with his neighbors in the standards set up by the Government. When a man wants to know how much wheat he has, he measures it in bushels. The engineer who wants to calculate the amount of water flowing in a stream uses the gallon as his unit. The merchant thinks of the value of his stock in terms of the dollar, and the housewife who plans her purchases and her recipes for cooking thinks in terms of Government-made money and Government-established weights and measures.

STANDARDS OF LIGHT AND OF GAS.

These measures, however, are by no means enough to satisfy the needs of modern life. With the increase in the number of

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1. Show the advantages of the metric system of weights and measures for purposes of calculation.

2. This system of weights and measures is legalized in the United States by act of Congress. Why do people not make use of it more generally in ordinary life?

3. Where is the system employed in this country?

4. It is found that the transfer of American machinery to France for the Army of the United States is involved in serious difficulties because of the difference in standards of measure. Point out some of the difficulties which would arise.

5. What is meant by a standard-gauge railway? What are the advantages of such a standard gauge?

things which can be bought in our day, there comes a new demand for standards. For example, many people buy light from a company which furnishes electricity and incandescent lamps. The person who buys light has a right to light which is steady and strong. The light is not satisfactory unless there is a steady current. If the current is not strong enough, or if there are too many people using it, there may be a flicker, which is disagreeable and injurious to persons using the light. Suppose there is one customer who suddenly turns on or off a great deal of current. His use may interfere with all the lights in the neighborhood. Whoever uses electric lights has a right to a proper quantity of current for his lights and a steady current at all times. This statement at once raises the questions: What is a strong light and what is a steady current? To answer these questions there must be added to standards of length and weight standards of light and electric current.

Another illustration can be found if we consider the case of a gas company which manufactures and distributes gas for heat, light, and power. The kind of service obtained in the domestic use of gas, such as cooking over top burners or in ovens, or in an open flame for lighting or in a mantle lamp, depends on the quality and pressure of the gas. If the quality varies greatly, the burners may flash back; and if the pressure drops too low, the flame may go out entirely. If this happens the escaping gas may cause a fire, an explosion, or asphyxiation.

In the second place, the value of the gas for heating or for giving light depends on the chemicals of which it is made. It is very undesirable to have in gas large quantities of any impurities, such as the very common substance called hydrogen sulphide.

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1. The earlier standard used in measuring light was candlepower. What kind of candle is referred to in this standard?

2. How are lights compared with each other?

3. What are the different standards for thermometers? Why was the freezing point in the Fahrenheit thermometer set at 32 degrees?

4. How do manufacturers of thermometers standardize the thermometers they make?

5. What are some of the units used in measuring electric currents?

6. How strong is the current usually supplied in an ordinary city current?

7. How strong is the current used in a trolley system?

8. Warnings are sometimes given in connection with strong power currents that they are extremely dangerous. How much electricity will kill a man if it passes through his body?

The heating value of gas per cubic foot is the best single measure of its usefulness, and this is tested by scientific methods of a very exact kind. The candlepower or amount of light given by an open flame is less important, and although it has for many years been used as a standard in measuring the quality of gas, it is not a good standard, and very few cities at present prescribe it.

PUBLIC UTILITIES.

Gas and electricity are commonly supplied to cities and towns by companies known as public-utility companies. The question whether such companies do their work satisfactorily can not be answered by measuring results with an ordinary measuring rod or an ordinary scale. Modern men of science have therefore set about making for us a new set of standards of measurement. These are exact measures of the purity of the gas supplied or the constancy of the current, and also measures of the results secured, such as the amount of heat, light, and power produced.

Here, again, as in the earlier case of standards of length and weight, there will be final agreement only when the Government takes charge of the matter. Our National Government, acting under the authority of the Constitution quoted in an earlier paragraph, has provided in Washington a great Bureau of Standards, established in 1901, which is studying all these problems and is giving to the country standards of a great many different kinds.

When one now wishes to find out whether a light is of a given strength one can get from the Bureau of Standards a lamp which has been tested and will give a certain strength of light when supplied with a certain definite amount of current. The name used for this standard of lighting is candlepower. Formerly the

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1. When gas is used for heating or cooking it is commonly passed through a certain type of burner. Describe this burner and tell why it is used.

2. What is the difference between natural gas and manufactured gas in regard to their qualities and values for heating and lighting?

3. What are the different methods of manufacturing gas?

4. What are the other products which come from a city gas factory?

5. The method of measuring the quality of gas is to burn it in a calorimeter. Get a description of a calorimeter and its method of use.

6. The Department of Agriculture has set up certain standards for cotton and wheat and other agricultural products. Show why it is desirable that a Government department should set up such standards.

7. A trade-mark is frequently referred to as a guarantee of quality. What does this statement mean?

light given by a single candle was, like the length of the human foot, a rough and useful measure. But science and the Bureau of Standards have supplied an exact measure of light. This bureau also tests thermometers, in this way giving to the people of the country standards of temperature. It tests the quality and strength of different materials, such as building materials and chemicals.

From these examples it will be seen that the meaning of the word standards is interpreted by the bureau in the broadest possible way. There are standards of measurement of size and quantity; standards of quality—that is, standards dealing with the properties of materials; standards of performance—that is, standards for determining the accuracy and power of instruments and machines; and standards of practice, such as standards of service rendered by public-utility companies. The Bureau of Standards is concerned with all these different kinds of standards, and has a large scientific and engineering staff engaged in many lines of investigation for the Federal and State Governments, municipalities, and the general public.

PUBLIC-UTILITY STANDARDS.

Passing over the other activities of the bureau, our attention may be concentrated on the work which it does with public utilities. This name, as was pointed out, applies to certain companies which furnish the public with electricity, gas, water, or transportation, as a street car company, for example.

A public-utility company gets a franchise from the city, that is, it gets the right to supply the electricity, gas, or transportation for a certain period at a certain rate. Many questions arise in

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1. Make a list of all the public utilities in your community.

2. A public-utility company differs from an ordinary commercial company in the fact that it is not obliged to set its rates through competition. Show how this fact may be turned either to the advantage or disadvantage of the public which depends upon this company.

3. What would happen if there were no laws regulating the rates imposed by public-utility companies?

4. What happens when two public-utility companies are allowed to operate in the same territory, as, for example, two telephone companies?

5. "A well-managed and well-regulated public utility is virtually a copartnership between the public-utility company and the community in which it operates." Show what is meant by this statement and discuss the way in which the two parties involved in this partnership may most advantageously help each other.

connection with the service of such a company which can be answered only by long and difficult scientific studies. The Bureau of Standards has undertaken many such studies. Thus at first the question studied were the testing of electric and gas meters and instruments; testing standard lamps used in measuring the candlepower of gas and of electric lights; investigating and testing devices for determining the heating value of gas; and studying the effect of atmospheric pressure and temperature upon the candlepower of gas lamps. Later, a thorough study was made of the conditions under which the methods of measuring could be used in practical ways. This was followed by a thorough study of rules and regulations which should be adopted for the various utilities. In all these studies the public-utility companies were fully consulted, and, indeed, the work was in reality a joint investigation by the utilities, the local authorities, and the Bureau of Standards.

The bureau can not force any community to adopt its recommendations. It can, however, make so clear a scientific statement of the case that everybody concerned will see the wisdom of following its suggestion. A few examples will show the kind of work it does.

ELECTROLYSIS.

One of the problems in communities which have electric street cars is the electrolysis problem. Electric street railways are usually operated by current supplied by overhead trolley wires. The current flows from these overhead wires through the trolley into the motors of the cars and out through the wheels into the tracks and thence back by way of the rails and earth to the power station from which it came. The current flowing through the

1. What are some of the requirements that may properly be made of a company that supplies water to the city?

2. Transportation is difficult to standardize because the requirements can not be exactly defined. Show what is meant by this statement.

3. Why are gas meters and electric meters used to measure the supply consumed in a house? Why should it be necessary to test these meters?

4. Water meters are sometimes used and sometimes not. Explain the difference between this situation and the one referred to in the last question.

5. The brief statement in the text with regard to a number of matters that need to be measured should be expanded. Thus, show why atmospheric pressure will affect the candlepower of gas lamps.

6. Every municipality has rules with regard to electric wiring. Why are such rules necessary? Show that the expense of installing an electric system is affected by these rules.

earth sometimes causes corrosion of gas and water pipes, and the lead sheathing of telephone and other cables. Such corrosion causes serious expense for repairs and sometimes causes interruption of service or even explosions due to gas leaks. Controversies in court as to the responsibility for such damage sometimes use up a large amount of money without repairing the damage. The Bureau of Standards has sent experts to places where such difficulties have arisen who find out the reason why pipes are injured. The reason often is that the electric current is badly distributed in different parts of the street-car system. Sometimes a change can be made which helps not only to stop the corroding of the pipes but saves the street-car company a great deal of expense in the better distribution and use of its current. Scientific studies in this way help all parties and the difficulty is removed. The Government, by contributing the scientific methods, renders a large service to the community.

This may not seem at first sight to be a matter of standards, but it is. The service rendered by the electric car line is unsatisfactory just in the degree in which it destroys the property of the city or of the gas or water works. Furthermore, by the use of their measuring instruments the scientists and engineers of the bureau can find where the difficulty lies and can suggest where improvements should be made.

COOPERATIVE DEVELOPMENT OF SAFETY CODES.

The National Electrical Safety Code is another example of the value of working together under the leadership of a Federal bureau to develop a set of standards for nation-wide use. The

1. The electrolysis problem was not understood when trolley cars were first brought into use. Indeed, it is not fully understood at the present time. Is it right for a community to throw the responsibility on a trolley company for the damage done to the water and gas pipes in the city streets? If the trolley company is not to be held responsible, is it just to the water and gas companies to allow their pipes to be injured? What is the responsibility of the community as a whole in such a case and how shall matters be arranged so as to place the responsibility where it really belongs?

2. When a community increases in size the public utility companies get advantages from the growth of the community. Who has a right to the profits which result from this growth?

3. Show how the Government can bring to the services of a city higher grade scientific experts than the city itself could employ in solving its problems.

safety code is a set of rules about where wires can be run and how they should be supported or insulated. Our city streets and country highways are covered by a network of wires carrying in many cases high-voltage currents of electricity. Safety requires that these wires be very carefully arranged and insulated. A safety code made out by the Bureau of Standards is much fairer to everybody than a set of rules made out either by a single company or by some town official who knew very little about electric currents.

The problem is a national one. If a hundred million people are to live and move under a network of electric wires and are to carry on hundreds of operations by means of electrical machines and other electric devices, such as the telephone, it is very important to have standards of construction and operation that are safe and reasonable. These must be kept up to date and must be enforced by all local agencies. The work of the Bureau of Standards in this connection is of far-reaching importance and is rapidly being recognized and adopted by State commissions, municipalities, and insurance companies, as well as by electrical utility companies and other electrical interests.

CONSERVATION OF NATURAL RESOURCES.

There are many other questions in connection with the operation of street railways, gas, electric light and power companies, telephone and telegraph companies, and other public utilities that can be studied profitably. One of these is the question of fuel supply, and the conservation of our natural resources. The greater use of water power and the electrical transmission of energy will save our diminishing coal supply. There has some-

1. What are some of the laws passed by communities to protect citizens from danger by fire?

2. In addition to the laws passed by the community, public warnings are frequently given of dangers which citizens must avoid for themselves. Would it be better to have more numerous laws than to depend upon people to take care of themselves? Many of the European cities have very much more detailed safety ordinances than we have in this country. Discuss the two ways of securing safety and decide which is better.

3. Show why safety rules can not be left purely to selfish interests.

4. If a person is injured, show how the community is concerned with his condition and how his injury is a public waste.

5. What is the danger to a telephone system from high-power electric wires in the city streets or on the country roads?

times been opposition to the development of water power by private companies because of the belief that such companies would not serve the public well. It is feared that the company will charge too high a rate or possibly furnish poor service. The cure for this fear that the company will not serve the public well should not be sought in preventing the company from doing anything. It is far wiser to let the company use the water power, but by the application of scientific methods make sure that it does its work well. The rate charged can also be determined with justice to all parties if the facts with regard to costs and with regard to quality of service are defined in an exact way. The advantage of such exact treatment of the cases through an established Government bureau is evident.

STANDARDS OF RATES AND SERVICE.

The people of this country pay about $2,000,000,000 annually for the service of the various public utilities, and this sum is increasing every year. Their intelligent and adequate public regulation is of vital importance, if they are to give efficient and satisfactory service, and at the same time have justice done to their managers and stockholders. Many people believe that thoroughly successful regulation is impossible and that public ownership will be the final result. Whether publicly or privately owned or operated, all utilities should be required to comply with proper standards of service and safety, and the communities should pay just rates for the service rendered. In fixing and maintaining such standards and rates there should be available the results of the most competent scientific and engineering investigations as well as of practical experience. The results of such investigations

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1. Who knows the power that can be secured by damming up a stream?

2. Review the earlier lesson in which the relation of the Department of the Interior to water power was discussed.

3. Review the earlier discussions which show that the Government has recently taken a hand in the control of the food supply, showing the relation of food supply to other natural resources and to the demand for expert study of the way in which the community should deal with its resources.

4. Higher institutions of education which are supported by State governments carry on a great deal of scientific work. Show how this scientific work is related to the needs of the community, giving instances if you can of benefits that have come to the community from scientific investigations in universities.

and of experience can best be collected by an unbiased national agency, with the cooperation of all the interests concerned. The results obtained to date by the Bureau of Standards indicate the usefulness and value of such work, and if it were extended in scope and increased in magnitude in proportion to the importance and magnitude of public-utility service as a whole, the results would be a great saving to the people and a vast improvement in service.

But this is not all. The successful control and regulation of public utilities has a powerful influence for good upon government, both State and municipal. The corrupting influence of public utilities on municipal government which has sometimes appeared is to be explained largely by the fact that there was no means available for exercising intelligently the power given by State legislatures to city governments. It was not possible to find out whether service was up to standard because there was no standard. For the same reason no one knew whether fair rates were being charged. The most effective way to secure wise and efficient administration for a city is to secure by scientific studies the information needed by city officials in the discharge of their duties, and to give this information to the public in order that it may form a correct public opinion. If standards for satisfactory and efficient public-utility service are fully worked out, scientifically and cooperatively, and made available to all, a long step will be taken toward solving one of the most important present-day problems, namely, the provision for cities, and in large measure for rural districts also, of safe, adequate, and efficient public-utility service.

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1. What advantages come to the community from free public schools?

2. In every European country high-school education can be had only by those who are able to pay tuition. Is it right in American communities for students to receive free higher education, especially when many children do not have the opportunity of going to the high school?

3. Ought communities to extend the public education system by supplying books, pencils, and other materials to all of the pupils? This is done in certain communities of the United States at the present time. In others it is not. Which communities are right?

4. What is meant by corrupting influences in public life?

5. What kind of education of the people will counteract these corrupting influences?

6. Show how the building of a bad road by public officials can be checked through the use of scientific standards and scientific methods. Also show how the use of these scientific methods will be most effective in the hands of a bureau of the Government.

MONEY AS A STANDARD.

One of the most important of all Government standards remains to be studied, namely, the money standard. As everyone knows, we measure the value of everything we buy and sell in terms of a unit which we call the dollar. Thus, we speak of the price of wheat as $2 a bushel, or the price of an automobile as $2,000, or the price of admission to an entertainment as a half dollar or 50 cents. We shall see that a measure of this kind is of the very greatest service.

MONEY AS A MEANS OF GUIDING EXPENDITURE.

For instance, every family which is not possessed of great wealth has the problem of making its income pay for the needs of a comfortable family life. Food, shelter, and clothing are absolutely necessary and will be provided for first. After these expenses are met, there is usually something left for other purposes. Then a real problem arises as to how the remaining funds shall be used. Something ought to be saved. How much? Enough to provide for a rainy day and to take care of old age. We reckon in terms of dollars how much shall be saved for these purposes, and then each year we must lay aside enough dollars to enable us to accumulate the fund regarded necessary.

Other questions such as these also arise: Shall we buy a chair or a picture? Shall we go to the theater or spend a week end at some pleasure resort? One tries to compare the amount of pleasure to be derived in these various ways with the cost of each. The dollar unit of measurement therefore becomes the means which guides us in the spending of our incomes.

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1. Show how money can be used as a measure of work.

2. Does the value of work depend on the amount of strength which is required? In answering this question show what is meant by the value of work and again illustrate the importance of money as a standard for measuring value.

3. Give some examples of the way in which a community is called upon to decide between various kinds of supplies that would be useful, but of which only a limited number can be actually secured.

4. Give examples in family and personal life of the same necessity of choice.

5. Are these examples given in the last two cases problems in the distribution of money or problems in the distribution of supplies?

6. Draw a distinction between money and goods needed for personal and family and community use.

MONEY IN BUSINESS CALCULATIONS.

The business man also uses the dollar unit in all of his business operations. He wants to produce goods as cheaply as possible. He therefore keeps accounts which show what it costs to buy raw materials, what it costs to manufacture them, and what it costs to sell the finished product. He keeps these accounts in terms of dollars. Now, there are different kinds of raw materials that he might use, there are different methods of manufacture, and there are different ways of selling goods. Which shall he use? He decides in each case according to the cost in dollars. Without a dollar unit for measuring costs he would have no accurate way of knowing which method is best. He would therefore be an inefficient business man. Moreover, because all business men would be similarly handicapped if we had no dollar unit, inefficient methods of production would be the rule. As a result, we would all have to pay more money for the goods we buy.

The dollar unit performs a similar service in all other lines of business—farming, retailing, wholesaling, mining, shipbuilding, carpentering, etc.—quite as well as in manufacturing.

BEFORE THERE WERE STANDARDS.

We know that the Government has found it necessary to regulate the various weights and measures in order to insure a uni-

1. In connection with our money system consider once more the advantages of the metric system in calculations. Show some of the difficulties which are encountered in business calculations because the money system has a decimal unit while our systems of weights and measures do not.

2. Business concerns commonly take a periodic inventory. Why do they do this?

3. A yearly account is commonly kept in public and private business. Why is it desirable that accounts should be closed annually at a definite time in the year?

4. What is the fiscal year of the United States Government?

3. It has been shown by students of agriculture that it is advantageous for a farmer to keep definite accounts showing the cost of feeding his cows and the income from the sale of milk. Show why a balancing of these two sets of accounts is important to the farmer.

6. If it is important for business of all kinds that definite accounts be kept, explain why these accounts are so seldom kept by small concerns.

7. Show that accounts are more essential in large businesses than in small.

form unit. The necessity for definite and unchanging units of money may best be understood by a statement of some of the troubles that arise when a currency is not uniform. Macaulay tells us that:

In the autumn of 1695 it could hardly be said that England possessed, for practical purposes, any measure of value. It was a mere chance whether what was called a shilling was really 10 pence, 6 pence, or a groat. The results of some experiments that were tried at that time deserve to be mentioned. * * * Three eminent London goldsmiths were invited to send £100 each in current silver to be tried by the balance. The £300 ought to have weighed almost 1,200 ounces. The actual weight proved to be 624 ounces. The same test was applied in various parts of the Kingdom with practically everywhere similar results. * * * The evil was felt daily and hourly in almost every place and by almost every class, in the dairy and on the threshing floor, by the anvil and by the loom, on the billows of the ocean and in the depths of the mine. Nothing could be purchased without a dispute. Over every counter there was wrangling from morning to night. The workman and his employer had a quarrel as regularly as the Saturday came around. On a fair day or a market day the clamors, the reproaches, the curses, were incessant; and it was well if no booth was overturned and no head broken. No merchant could contract to deliver goods without making some stipulation about the quality of the coin in which he was to be paid. Even men of business were often bewildered by the confusion into which all pecuniary transactions were thrown. * * *

1. What were the political conditions at the time of which Macaulay writes in the paragraph quoted?

2. Why should England at that period have been without standards?

3. Do you know of any modern disputes which, like those described by Macaulay, arise out of an absence of definite standards of measure?

4. Point out some of the advantages that the precious metals have over the other articles that have been used in earlier times for money.

5. What are the world's sources of supply for gold at the present time?

6. From time to time anxiety has arisen in this country because of shipments of gold out of the country and because of large shipments of gold brought to this country. Explain the reason for this anxiety.

7. If the Government coins gold without expense to the owner how is the cost met?

8. In the same way, how is the cost met for the printing of paper money? Should these expenses not be charged to the people who own the metal or who first receive the paper money?

9. Look up the history of the American standard of money, namely, the dollar, and find out where this standard came from.

The price of the necessaries of life, of shoes, of ale, of oatmeal, rose fast. The laborer found that the bit of metal which, when he received it, was called a shilling, would hardly, when he wanted to purchase a pot of beer or a loaf of rye bread, go as far as 6 pence.

VARIOUS TYPES OF MONEY.

There is a long history back of our present money system. Various commodities have served as money at different times and at different places. For instance, furs, tobacco, leather, and wampum have all been used as money. The great difficulty with each of these forms of money was that the units were not uniform in size or quality, and hence caused the kind of trouble which was described in the preceding paragraph.

Finally, gold and silver were adopted as money by all of the leading countries, and at the present time nearly the whole world uses gold alone as the basis of its monetary system. The reason for the adoption of gold as the standard money is that it is what is called a homogeneous metal; that is, every part is like every other part and when it is coined into pieces of a definite weight all coins are exactly alike.

MONEY AND THE GOVERNMENT.

There are two interesting facts about the money standard which we must clearly understand. First, our Government can not control the real value of gold; that is, its power to buy other things. If the amount of gold is increased, the power of any single dollar of it to purchase other commodities becomes less than it was before. All the Government can do is to guarantee that a coin is of a certain definite weight and a certain degree of purity. It provides that 25.8 grains of gold shall be a dollar and that this gold shall be nine-tenths pure. The Government no more regulates the value of gold when it prescribes the number of grains that shall constitute a dollar than it fixes the value of wheat when it says that there shall be 60 pounds in a bushel.

In the second place, the Government does not own the metal which it coins. Anybody who owns gold bullion may take it to the United States mints and the Government will coin it into gold coins for him. The Government performs this service free of charge, and hence we have what is called gratuitous coinage. The individual who took the gold to the mint is the owner of this money. The Government is merely acting as his agent and supervises the coinage process.

LESSON B–22. FINANCING THE WAR.[1]

The National Government has to have money to carry on its work. In 1913, out of about 35 billion dollars spent by the people of the United States, more than 3 billions were spent for the purposes of National, State, or local government. The National Government used about one-third of this 3 billions to pay the salaries of Congressmen, judges, and other employees, for the wages, equipment, and supplies of its soldiers and workmen, for pensions, and for public improvements, etc.

Now that we are at war the National Government needs not one, but many billions of dollars. The task of paying for the war is an enormous one. The expenses of our Government are increased because of the necessity of assisting our allies in the struggle. For the 12 months ending June 30, 1918, Congress was obliged to appropriate, instead of the ordinary amounts of money, nearly twice as much to carry on its usual activities. This part of the Government's expenses will amount to $1,977,210,200. A second set of war appropriations brought the total up to $18,879,177,015. In addition to these vast sums of money, contracts were authorized calling for $2,511,553,925 more, the larger part of it to be expended during this fiscal year which extends up to July 1, 1918. Thus the total of appropriations and authorized contracts for 1917–18 is $21,390,730,940. This includes whatever sum up to 7 billions is needed by our allies. A part of the money called for, especially that set aside for the allies, may not be spent, but it is likely that further appropriations made before the end of the year will more than offset any sums not spent out of the appropriations made. If the war continues beyond the year, the sums called for each year are likely to be larger rather than smaller than those appropriated this year. It has been said that "three things are necessary in carrying on war—money, more money, and still more money."

WARS ARE WAGED WITH GOODS AND MEN, NOT MONEY.

Because the operations of the Government, like those of the business world, are carried on by the expenditure of money, our

[1] This lesson was prepared by Harry A. Millis, associate professor of political economy, University of Chicago. It aims to show that money is merely a means of procuring what is needed. It is not in itself sufficient. The Government requires men and supplies. These can not be provided without genuine sacrifices on the part of the people of the country.

attention is likely to be caught by the vast sums of money voted by Congress for war expenditures. However, money is only something to be used to help carry on the war. The real problem is to provide the things needed for the war and the services of people which will be paid for with money. Money is needed only because it is the means of carrying on the real business of the Government. The real business of the Government is to get men to serve as soldiers and sailors and to secure the production of airplanes costing hundreds of millions of dollars; of merchant ships costing well on to 2 billions; of fortifications, guns, shells, and the like costing more than 2 billions; of 350 million dollars' worth of clothing for the Army, and still more for the other branches of the service. It is the business of the Government to provide much more food than we need, so that our allies may be fed; to assist in clothing, feeding, and housing persons dependent upon those at the front at a cost of 176 millions; and to do other things on a corresponding scale The big problem of financing a war is that of getting these things. To get these things the Government must have money, for it must pay as any business concern would for the things it buys.

PROVIDING WAR MATERIALS WILL REDUCE ORDINARY SUPPLIES.

It is important for us to note that within 12 months we must produce most of the things needed this year. Few of them are in existence, ready for purchase by the Government. The ships, the airplanes, the food, the clothing, must be produced in 1917–18. They can not be produced in 1930 and 1950 if they are to be used now. We must provide them now, our children and our grandchildren can not provide them for us. If we are to have food, clothing, and war goods we must either produce them in addition to our usual products, or we must produce a smaller quantity of

1. What are some of the largest expenditures of the State government?

2. What are some of the expenditures made in peace times by the National Government for national improvements?

3. When a war begins does the appropriation of money bring supplies?

4. This war is on such a large scale that the problem has been unusually difficult. Find out from histories how large the armies were in the Revolutionary War, in the Civil War, and in the Spanish War.

5. What does it cost to equip a single soldier?

6. What does a machine gun cost?

7. What does a battleship cost?

8. By way of comparison find out what an office building or a schoolhouse costs.

our usual products and devote ourselves to the war needs, or we must use up what we should at other times set aside for future use. We must raise more food and manufacture more goods, in spite of men withdrawn from their usual work. We must not waste anything. We must cut down our use of goods, especially of luxuries, and we must take the money and laborers from ordinary industries.

Only by readjusting our producing power can we produce all the supplies so imperatively required by the Government. It is estimated that the Government will use commodities equal in value to more than a third of all that we produced last year. When the matter is put in this way we see that it is the production of materials and supplies which can be used in waging war for which our Government is really calling. Money is merely the means to this end and is of no importance by itself.

RAISING THE MONEY.

How is Congress to raise the large sums of money required to pay the Nation's bills? The answer is known to all, for we are familiar with "Liberty loans" and are now paying new taxes. A part of the money is being obtained from taxes, a part from the sale of bonds.

NEW TAXES.

Two new tax laws are now in effect which directly or indirectly touch the pocketbook of everybody in the country. It costs more

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1. Some time ago a newspaper cartoon by McCutcheon entitled "Comprehending a Billion" showed how many minutes have passed since the beginning of the Christian era. Calculate how many.

2. What will be the interest at 4 per cent on 21 billions?

3. Can we have all "business as usual" when war business is so extensive? Would it be possible for us to spend as much on our living as before the war and provide the Government with all that it needs to carry on the war? If so, how?

4. Is it desirable or undesirable to spend $60,000,000 in improving roads in a single State during the war? Why?

5. Is it desirable to invest large sums in the erection of apartment buildings during the war? Why does Great Britain practically prohibit building except for war purposes and place great restrictions even on repairs?

6. Do men in the Army use up more supplies than they would in ordinary life?

7. What effect has the withdrawal of men for the Army had on industry?

to send letters than it used to. It costs more to travel on trains. People also pay extra taxes on incomes, excess profits, and luxuries.

These new and higher taxes were voted by Congress and were in this way made a part of the law of the land. Since Congress is made up of the representatives of the people, we may say that the people of this country have agreed to give some of their money to carry on the war every time they mail a letter or use taxed articles, or enjoy a luxury. As a result of this legislation it is expected that the revenues will be increased to about $3,800,000,000 a year. And Congress is likely to enact new tax measures in the near future.

INCOMES AND EXCESS PROFITS.

Incomes are heavily taxed. About a third of the revenue expected under the laws now in effect will be derived from the income tax. Single men and women whose incomes exceed $1,000 and married men and women with incomes of more than $2,000 a year have to pay an income tax. Corporations are also taxed. Beginning at a very low point, this tax approaches 67 per cent in the case of incomes amounting to several millions of dollars.

Excess profits—that, is those profits which are larger than before the war—are heavily taxed. About two-fifths of the total revenue from the tax will be derived from unusually large profits made during the war. In iron, steel, copper, and many other industries, profits are much larger than usual because of the enormous war demands for their products. Altogether the excess of profits over the peace level amounts to several billions of dollars, and the tax imposed ranges from 20 to 60 per cent. Thus the larger

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1. What does a Liberty bond promise the holder? When does it become payable? When due? What will the Government do when bonds fall due?

2. Who has a right to impose taxes for building a country road or paving a city street?

3. Suppose that a county needs a courthouse. How does the county get the money?

4. Get an income-tax blank and see what it is like.

5. What are some of the forms of wealth that are exempt?

6. What forms of wealth are most heavily taxed?

7. What is the exemption granted if there is a minor child in the family?

8. Who collects the various forms of taxes? What time in the year are they due?

part of the taxes will be paid by those with large incomes and high profits. The great mass of the people is not compelled to shoulder the larger part of the tax burdens.

LUXURIES TAXED.

Tobacco, beer, whisky and brandy, soft drinks, freight bills, passenger tickets, patent medicines, chewing gum, movies and nearly all other amusements, club dues, automobiles and motorcycles, musical instruments, talking-machine records, and many other things have been either newly taxed or more heavily taxed for the support of the Government. A large part of these taxes will be borne by those who tax themselves by using tobacco and intoxicating drinks, by buying sporting goods, automobiles, and other luxuries, or by going to moving-picture houses and other places of amusement. Few of the taxes are placed on things people must buy or do, for Congress has thought it wise not to tax necessities. Because of high prices it is hard for many to pay for the necessities and comforts to which they are accustomed, even though the Government does not tax them.

BORROWING MONEY.

Besides levying taxes the Government also borrows money through the sale of its bonds. Interesting questions have arisen

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1. What is meant by the loan policy of financing a war?

2. Why is it generally easier for a government to get money by selling bonds than by levying taxes?

3. What do you think of the position of many who hold that the foreign governments should sell their bonds directly to us rather than have our Government take them and sell its bonds in their stead? Would the bonds be bought? What about the rate of interest that would have to be paid? Would it be wise to have two or more governments engaging in bond-selling campaigns at the same time?

4. Wages have gone up as a result of the war situation. Can you see some reasons why?

5. If necessities were taxed, would not the Government get the money it needs faster?

6. Is there any limit upon the amount a government can borrow? Is a large national debt a source of strength or weakness? Should a Government debt be paid? Why or why not?

7. Which would you expect to disturb business more, taxation or borrowing?

8. When arrangements were made for the loans to our allies it was stipulated that the money should be spent here. What are we really lending our allies?

as to which method of raising the necessary revenue is preferable, to what extent each should be used, and as to what kinds of taxes and what forms of loans should be employed.

The statesman has no more difficult questions to answer than these. In arriving at a decision he must consider many things; among them justice to everybody, convenience, and the readiness with which the necessary money can be obtained. He must take into account the effects of what is done, on business, on the political situation, on the amount of wealth in the hands of different classes, and he must keep in mind the use to be made of the funds.

LENDING TO THE ALLIES.

In considering these questions it is to be noted, first of all, that a large part of the money collected by our Government is for the use of the allies. Already more than four billions have been loaned to them, and nearly all of it has been spent in this country for supplies and munitions. In return for this money our Government receives the bonds—the promises to pay—of the countries to which the loans are made. Since our Government holds these bonds, it is proper that it, in turn, should obtain the funds for these foreign loans by selling its own bonds. By so doing our business men who furnish goods are really paid by those who buy United States bonds, when it would be difficult if not impossible for the allies to sell their own bonds in this country.

THE LOAN POLICY.

When we come to the question of the best way to raise money for the use of our own Government, we find strongly opposed views. During the War of 1812 and the first half of the Civil War the so-called "loan policy" was followed. The loan policy of financing a war means that only enough is raised from taxes to meet

1. Paper money put out by a government without promise to redeem it in gold or something else upon demand is called a "coerced loan." Who makes the loan?

2. What is a "greenback"? If it had been redeemed on demand, could it have fallen to 40 cents on the dollar?

3. Can a government save money by issuing paper money instead of selling bonds? If so, would it be wise to issue it? Why or why not?

4. How much is paid to a soldier and to a sailor?

5. What arrangements have been made for the soldiers' families? Review from an earlier lesson.

6. What is the pay of soldiers in other armies?

the peace-time bills, to pay the interest on new debt contracted, and in the course of years to provide a fund for the payment of this debt. The extraordinary outlays, like those for keeping the Army at the front, are met by borrowing. Though this loan policy has been widely followed in the past and is now followed in most of the countries at war, perhaps no one whose opinion carries much weight in the United States would advocate its use at the present time in this country. The main reason for this is that the loan policy has proved to be a bad one in past wars, for without proper support by taxes money can be borrowed only on harder and harder terms. All agree that more money should be collected from taxes than called for under the loan policy.

LOANS THE POPULAR METHOD OF WAR FINANCE.

While it is agreed that the loan policy is bad, there is, nevertheless, a very general feeling that the greater part of the additional revenues required during the war should be obtained from loans and only a fourth or a fifth of it, say, from taxes. People dislike to pay taxes. They buy bonds much more freely, because they get their money back later with interest. And, if they need the money before the Government's promise to pay becomes due, they can sell a bond to someone for cash, or they can use it as security and borrow money at a bank. A man said the other day, "I don't want to pay taxes and get a tax receipt. I will buy Liberty bonds, for I then draw interest and later get my money back."

LOANS DO NOT SUPPLY REAL GOODS.

Borrowing most of the money needed might be advocated on the ground that it is the easiest way to get it, for most people feel as this man does. The chief argument used in favor of borrowing is that the burden of paying taxes is then shifted to the

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1. "A nation which employs war prisoners to do its work is increasing its army." How?

2. How does our Government try to increase production? Review the lesson on fixing the price of wheat.

3. How are we to save supplies?

4. Review once more the list of supplies which it is most urgent that we save.

5. In ealier times armies "lived on the country." Why is this not possible now?

6. This is a war of machinery. What effect does this have on costs?

next generation and the cost of the war is spread over a number of years. This, however, is a mistaken idea. The burden can not be shifted to the next generation, nor, in the present situation, can it be shifted to other countries by borrowing abroad.

What the Government really gets is labor and goods of one kind or another. We can not get the goods needed from other countries and pay for them later. There is no one who can extend credit to us as we extend credit to our allies. We must produce and supply the Government with what it needs ourselves. Here is where the burden lies, and inasmuch as the Government must be supplied now, the burden can not be shifted to the next generation or spread over a number of years.

The full understanding of these financial problems requires a knowledge of banking and of the way in which loans affect prices. We shall not attempt to take up these matters here. The lesson which is clear from what has already been said is that we can not get through this war without real sacrifices and without straining every energy in the production of goods.

Our Government is trying to induce farmers to plant more crops, to persuade laborers and employers to cooperate in the production of manufactured articles. The Government has commissions which are building ships and others which are arranging the purchase of supplies.

All the transactions are carried on with money, but they are all aimed at getting things needed for use. No better example could be found with which to show, on the one hand, the importance of money, and, on the other hand, our dependence on things which constitute the real supplies which are required for life.

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LESSON B–23. THRIFT AND WAR SAVINGS.[1]

The Government of the United States is asking the people of this country to save. We are asked to save food, to save fuel, to save labor, and to save money. Two reasons are given why it is necessary that we save. In the first place, the country must have materials with which to carry on the war and materials with which to help our allies across the ocean. Since the Government needs so much more than it has ever required before, the people will have to go without some of the things that they have been accustomed to use. The fact is that we should have to go without many things even if the Government were carrying on no campaign for saving, because the world's supply of a great many articles has been so reduced by the war that it is quite impossible to get enough to go around.

SAVING WILL TEACH THRIFT.

The second reason why the Government is asking people to save is that we shall gain greatly in this country if we learn to avoid the wasteful expenditure of our wealth. The people of this country have in the past been very extravagant and wasteful. We have not tried to save food as the people of Europe do. We have been wasteful of our coal and petroleum, of our forests and water power. The result is that, in addition to what we actually eat and use for our comfort, we use up a great deal of good material without getting any return for it. We have been able to do this because the country is fertile and there has been plenty of land for the cultivation of crops and because we have had vast mineral wealth and native forests. The country has been supplied abundantly with everything that anybody could want, and the result has been that we have formed habits of the freest use of everything that the country afforded.

We no longer have great tracts of unused lands to be given away to settlers, and we have used up so many of our natural resources that the supply of them for future generations will be limited. We must therefore learn to save. The lesson of thrift taught by the war will prepare us for a kind of national life in the future which will be much stronger because it will be based

[1] This lesson was prepared by Shailer Mathews, professor of historical and comparative theology, University of Chicago, and secretary of the War Savings Committee of Illinois. It calls attention to the plan for war savings which the Treasury Department of the United States has worked out for the purpose of obtaining a loan of two billions of dollars and at the same time giving the people of the country an opportunity to cultivate habits of thrift.

upon more careful use of the resources of the country. Government officials are telling us, therefore, that the enforced economies of the war are not without national advantage. The lesson of thrift will be one of the rewards that will come to the country in return for the sacrifices and struggles which the war has brought upon us.

THRIFT IS NOT HOARDING.

Since we have this lesson of thrift to learn and since the Government must have materials with which to carry on the war, it is important that we find out, first, what real thrift means, and, second, that we find out the ways in which we can cultivate habits which will make the largest contributions to the Government's need and to the successful outcome of the war.

Some people have the notion that thrift means the accumulating of money and putting it away where it will not be taken or destroyed. Such people ought to be reminded of the parable of the talents. The servant who buried his master's money in the ground where it would be of no use to him or anyone else made the mistake of merely hoarding the wealth that had been intrusted to him. That kind of saving is of no use to the world. Wealth ought to be employed, and the lesson of thrift which it is important for us to learn is the lesson of the proper use of our savings, so that these savings shall be the means of further production.

SAVINGS HELP TO PRODUCE NEW WEALTH.

Consider an example of the way in which savings can be made useful to the community. If a man who is earning $100 a month by carefully economizing in his purchases and by going without

1. Make a list of the different kinds of savings which the Government has asked the people of the United States to practice.

2. What kinds of savings have been necessitated because of the lack of supplies in your part of the country?

3. What materials are most likely to be lacking in European countries because of the interruption of trade that has come from the war?

4. What are some of the materials of which there is a scarcity throughout the world as contrasted with the period before the war?

5. What can you find out about types of economy which are being practiced in Europe more commonly than in this country? In this connection find out if you can how the forests are treated abroad and what is done to promote agriculture.

6. What are some of the conditions likely to arise after the war which will make a special demand on the people of our country for the practice of thrift?

some of the luxuries that he might enjoy lays aside each month $5, he will accumulate a fund of money with which he can buy a machine. That machine will increase the amount of work which the world can do. The man's savings help him in this way to increase production. He can produce not only through his own labor but also whatever the machine can help him to accomplish. Suppose, for example, that the man earns his money by husking corn and invests his earnings in a husker. His earning power is increased in this way and if he is careful in his savings and in his purchase of machines, he may come ultimately to be able to produce many times what he could produce with his hands.

All the machinery of the country has been provided in this way. We speak of wealth which has been put at work as capital. Capital grows out of self-denial. If our ancestors thousands of years ago had eaten all their grain instead of saving something for seed, the race would have died of starvation. The seed which is saved during the winter and used for spring planting is capital just as the machine which is bought from a man's savings. The reason why we have so much more than our ancestors and the reason why the world can easily support an increasing population year by year is that we have added to human strength in producing crops and manufactured articles a vast amount of productive machinery and other forms of capital.

THRIFT A FORM OF FORESIGHT.

Many people do not see the importance of thrift, which consists in saving and using one's savings for wider production. If a man earns wages and then stops work as soon as he has obtained

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1. What are some of the rates of interest which money ordinarily draws when it is used to develop business?

2. Why should there be a limit prescribed by law for the rate of interest? What is that limit in your State?

3. What are some of the ways in which small savings can be profitably invested?

4. Find out how the savings banks take care of people's savings.

5. The Government organized some time ago a postal savings bank. Find out about this, if necessary, by going to the post office and getting a full statement about the methods of depositing savings in that way.

6. What are some of the machines that are commonly used in the home to increase the efficiency of a worker?

7. In the same way find out how machines help in farming and in some one line of manufacturing.

enough to keep him alive for a little time, we say that he has no foresight. He does not realize that he ought to keep on working all the time in order that he may save instead of using up all that he has earned.

To provide for the future by saving in the present is one of the differences not only between foolish people and wise people but also between the lower and the higher forms of civilization. There are savage tribes to-day who do not see the importance of laying aside capital for the future. People living in tropical countries have very few needs which are not immediately supplied by nature. They are not driven by the necessities of a harsh climate to provide carefully for future needs. They do not progress in civilization because they have not learned the lesson of thrift.

ADVERSITIES SOMETIMES CULTIVATE THRIFT.

Adversities which teach a people how to save and put aside capital have very frequently turned out to be blessings, because they have built up a civilization which otherwise could not have been developed. After the Franco-Prussian War, in 1870, the French people found themselves under the necessity of raising a great sum of money which victorious Germany imposed upon France as a war indemnity. This sum was equal to a billion dollars. It was believed by many people at the end of that war that Germany had succeeded in crushing France by demanding of her so huge a sum of money, but it turned out that the French people learned the lesson of thrift. Everybody saved and through this saving built up the industries of the country, and the result was in an astonishingly short time a prosperity and a productiveness which had never been equaled before.

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1. One of the methods of saving for the future is through the purchase of insurance. Find out what insurance means and what are the advantages of that form of saving.

2. Considering civilization as a system of saving, indicate some of the additions to the wealth of your community which have been made during the last year or two.

3. Is a public park the result of saving on the part of the community?

4. Are better modes of transportation the results of savings on the part of the community?

5. Do you know of any community or any section of a community which does not contribute very largely to the saving of wealth?

6. In this connection consider the relation of a tramp and a criminal to the community and indicate why it is that we regard such people as undesirable citizens.

SMALL GOVERNMENT LOANS.

The French Government contributed to the prosperity of France by making it possible to invest small sums in Government securities. This is one of the important lessons with regard to saving which Governments have learned from the French example and have put into practical operation in the present war. Before the present war the Government of the United States sold its bonds only in large denominations. That meant that only large investors could buy Government bonds, for they were all sold for $1,000 or more. The ordinary man who saves only a little money from year to year could not purchase these large Government bonds.

As soon as our Government found itself obliged to get the vast sums that were described in the last lesson it was decided that the small savings of the people must, if possible, be drawn upon for the use of the Government, and at the same time it was believed that all the people must be given training in how to save. The Government, therefore, issued bonds for much smaller sums of money. Some of the Liberty Loan bonds could be bought for $50 each, so that even the small savings of the people could be invested in Government securities.

A PEOPLE'S LOAN.

Even this, however, did not meet fully the needs of the case. The Treasury Department has therefore organized a method of saving which makes it possible for everybody to contribute to the war, not only by going without wheat and meat and the other foods that are needed for the allies, but also by depositing with the

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1. Find out what nations were engaged in the Franco-Prussian War and what was the cause of that war.

2. What is the relation of that war to the present war?

3. In discussing peace terms in the present war a great deal is said about no indemnities. Explain what is meant by an indemnity. Why are some people advocating at the present time peace without indemnity?

4. Why are Government loans more secure than loans in ordinary business?

5. The Government usually pays a lower rate of interest than business concerns for the money which it borrows. Why should this be so?

6. What was the rate of interest commonly paid on Government loans before the Liberty loans were launched?

7. Among the large investors who purchased bonds of the Government before the war were banks. Where did they get the money with which to purchase the large Government bonds?

Government small sums of money which will help the Government to get the materials needed for the Army and Navy and for the other extraordinary operations of the war. By this means the Government expects to secure in a year $2,000,000,000.

THRIFT STAMPS.

This plan for collecting small savings is very simple. The Government has issued two kinds of stamps. One kind of stamps are called "thrift stamps." They sell for 25 cents each. The purchaser of these stamps is supplied with a card on which he can paste them. The card has space for 16 stamps. It is filled up, therefore, as soon as one has purchased four dollars' worth of thrift stamps. These stamps can be secured at any post office and from numerous other stations that are established in banks and stores and in other places where they will be easily accessible to all the people. The mail carrier will bring them if he is asked to do so.

WAR SAVINGS STAMPS.

When the thrift card is filled up with stamps, it can be exchanged for another kind of stamp which is to be pasted on a certificate and is known as the "war savings stamp." Anyone can obtain the war savings stamps without waiting to save up the money in thrift stamps. The face value of a war savings stamp is $5, but this value will not be reached until January 1, 1923. In January of 1918 the war savings stamp cost $4.12. In February it cost $4.13. In March and subsequent months of 1918 it will cost 1 cent more for each month during the year. If this war savings stamp is kept until January 1, 1923, the Government

1. What was the amount of the first and what the amount of the second Liberty loan?

2. What is the rate of interest on the Liberty loans?

3. What were the methods used by the Government in securing subscriptions to these two loans? Why did these methods differ from methods that have been employed in earlier times?

4. It has been argued that, unless the small savings of the people can be secured for Government use, the business enterprises of the country will be disturbed. Show why loans by the Government might disturb the business of the country.

5. What is the average amount necessary from every person in the United States in order to secure the total amount which the Government wants from the war savings loan?

6. Examine a thrift stamp and point out why it bears the particular design which it shows.

will redeem it for $5. If the owner wants to cash the stamp before 1923, he can do so, receiving back his investment and a rate of interest somewhat lower than that which will be paid in 1923. That means that the Government will pay to the owner of such a stamp what the stamp cost originally together with interest.

THE INTEREST WHICH THE GOVERNMENT PAYS.

The Government needs for its present operations a great many things which have to be purchased with money. The demand for these things is very urgent. If the Government is to survive the war, it will have to have these things immediately. It is willing, therefore, to pay to anyone who will contribute to the immediate needs of the Government a certain amount of interest above the original investment. The rate at which the Government will pay in 1923 for the money invested with it is 4 per cent, and this interest is compounded every quarter so that the returns to the individual investor who will buy the war savings stamps are large. If the money is drawn earlier, the rate is 3 per cent. The fact that the Government is back of the stamps makes them perfectly safe. Then, too, they can be registered at any post office and will be doubly safe as investments for the person with small savings.

The Government asks everyone to help sell the stamps. It asks that war savings societies be organized to distribute information and encourage those who would not save unless encouraged by others. Such societies will also provide for savings of less than 25 cents.

AMERICANS HAVE NOT SAVED AS THEY SHOULD.

There are a great many facts on record which show something about the extent to which the people in this country have saved

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1. Explain why a war savings stamp should cost more in March than it does in February, including in your explanation the reason why a thrift stamp does not change in price.

2. Make some calculations which show approximately the amount of interest which the Government will pay on the war savings stamps.

3. Why should an organization encourage people to invest in war savings stamps?

4. How can such an organization work out a plan which will make it possible to deal with smaller sums of money than that required for a single thrift stamp?

5. One of the most important activities of the Government during the war is to build ships. Explain the reasons why this war has been wasteful of ships.

money in the past. It is estimated that we produce each year goods that amount in value to 40 billions of dollars. We save about one-tenth of this amount year after year under ordinary circumstances, and much of this is added to the country's working capital. It is in this way that the country has built its railroads, its factories, its buildings, and its cities. It is through these savings that farmers have accumulated their machinery, their live stock, and their seed.

NEW DEMAND FOR MORE SAVING.

A vast amount of wealth accumulates in the country through this setting aside year after year of a certain amount of capital. We are asked now to produce a great deal more than ever before and to set aside for some years to come three or four times as much as we usually do. This means that everyone should try to save not only 10 per cent of what he produces, but 30 or 40 per cent of what he produces. Such additional saving will be necessary because war is sure to destroy some of the wealth of the country that has been set aside. The destruction of buildings and railroads is very great in the countries where the war has been carried on. In addition to this, the destruction of steel and gunpowder is very great through the mere explosion of the shells which are used in the big guns. There is also an enormous amount of waste because men have been taken away from useful occupations and have been wounded and in this way rendered unable to contribute to the world's industries.

Our savings will be in part wasted by the destruction of war, but we shall be trained in methods of economy and in the appreciation of the value of the things that we have in such a way that when the war is over we can begin to build up the railroads and buildings of the country more rapidly than we have been able to do in the past.

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War Savings Societies: What They Are and How to Organize Them.

Textbook for Teachers on Thrift Stamps and War Savings Stamps.

School Plan Book for War Savings Campaign.

Other literature can be obtained by writing to the several State directors of war savings.

Chapter VII.

CONCENTRATION OF POPULATION, INDUSTRIES, AND INSTITUTIONS.

It is not often that a city is made to order. Usually its growth is very gradual. A few families settle, it may be, near a crossing over a stream, or at a cove by a body of water, which seems to be a good place for boats to land, or at some break in transportation, as where a stage line meets a railroad. If the location proves favorable, others join the original settlers; merchants come to supply them with goods, mechanics to build their houses, and to repair their wagons; doctors to heal their sick, and lawyers to settle their disputes; churches and schools are established, and a village develops. Agriculture in the vicinity is stimulated, trade increases, manufacturing and transportation facilities are improved, but years generally pass before a full-fledged city appears. Sometimes, indeed, great numbers of people flock to a place where some valuable mineral has been discovered and build a city suddenly and unintentionally.

There have been a few conspicuous instances, however, in which a city has been deliberately founded for a definite purpose and endowed with the attributes of a metropolis, all within a comparatively short time. Peter the Great founded St. Petersburg (or Petrograd) and compelled people to move there whether they wished to do so or not. The city of Washington was planned and built for the capital of the Nation, but many years passed before it was a city in fact. The Russian Government required only a few years to build the city of Dalny as a terminus of the Trans-Siberian Railway.

Villages have frequently grown up about single manufacturing establishments, and some of them have become fair-sized cities. In the case of Gary, Ind., the complete city was deliberately planned from the beginning and built for the purposes of a great industrial corporation. The way in which it was done makes an interesting and instructive story.

LESSON B–24. BUILDING THE INDUSTRIAL CITY OF GARY.

By G. W. SWARTZ, *Assistant Superintendent of Public Schools, Gary, Ind.*

In the spring of 1906, if one had walked along the southern shore of Lake Michigan, where to-day is the city of Gary, one would have found only acres of sand dunes and scrub oaks, with here and there a farmhouse or a squatter's dwelling. Gary has grown up within 11 years. It has a population of 70,000 inhabitants. About half of these are foreigners, many of whom have come to America within the 11 years that have elapsed since the city of Gary was established. The other half are native Americans who have come from all parts of the country to find employment in one of the greatest industrial plants that have ever been built.

The city of Gary was established by the Indiana Steel Co., which is a subsidiary company of the United States Steel Corpo-

ration. As the site for their new city, the Indiana Steel Co. purchased several thousand acres of land in the northwestern corner of the State of Indiana, extending for 6 miles along the southern end of Lake Michigan and about 30 miles east of Chicago.

ADVANTAGES OF LOCATION.

The reason the Indiana Steel Co. chose this particular site may be understood by anyone who studies a map showing the regions from which coal and iron can be obtained. Iron ore is found in great quantities along the shores of Lake Superior and is brought to Gary in large lake boats that make the trip by a water route from Lake Superior to the end of Lake Michigan. Numerous railroad lines connect with the coal mines that supply the coal necessary to make the coke for feeding the furnaces that smelt the iron and for power with which to drive the great machines that handle the iron and steel in the mills.

Furthermore, the railroad lines necessary to carry away the products of the Gary steel works are available, as all trunk lines converge in the Gary region and are connected by belt lines encircling the entire district, including the city of Chicago.

Great yards for the storage of cars have been provided which will accommodate 15,000 cars. In these yards the materials that are turned out by the steel mills can be stored until they start on their trip eastward or westward across the continent.

The steel company's holdings are used for mill sites, business blocks, parks, playgrounds, and homes, The rapid growth in

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1. Mention some of the reasons which determine the location of cities.

2. Find a number of cities, through a study of your geography, that are dependent upon agriculture for their chief business. Contrast these with cities that are chiefly commercial.

3. What are some of the great industrial cities of the United States? What are some of the chief industrial cities of Europe?

4. What natural advantages are necessary for industries? In answering this question, distinguish three or four typical forms of industry.

5. What is meant by a subsidiary company? What are some of the advantages in business organizations of such companies within a great corporation?

6. What are the chief sources of iron ore in the United States?

7. What are the geographical facts that determine the development of the city of Pittsburgh as the first great iron and steel center in the United States?

population made it necessary to expand the city, which now covers 31 square miles, or more than twice the area as originally planned. This expansion is due to the gradual absorption of large areas of land held by individuals and land companies wholly independent of the steel company. A large part of the foreign population lives in that part of the city acquired in this way.

ADVANTAGES ARISING FROM NEW CONSTRUCTION.

One advantage that came from building this city and its steel works on an entirely new site was the advantage of arranging the mills in such a way that there could be the closest cooperation between different branches of the industry. Most industrial plants grow gradually, and the placing of the buildings and the construction of roadways can not be planned in advance. In this case there was nothing to prevent laying out the city and building the mills in accordance with the most modern municipal and industrial practice; but it required the expenditure of a great amount of labor and vast sums of money to put this site into shape for use. The mill site, for example, was crossed by several lines of railroad and by a winding river. The railroads were relocated and elevated through the city of Gary. The river was straightened and its original bed through the mill site was filled with sand on which several of the mills have since been built.

HANDLING THE ORE.

As there was no harbor of any kind, the steel company built a slip with a breakwater protection. The slip is about 5,300 feet

1. What are some of the chief railroad lines that pass near Gary?

2. Indicate by reference to a map of the Chicago region the reason why a belt line is necessary to the development of Gary and its railroad connections.

3. Find some industrial plant which has grown up gradually and show that the arrangement of its buildings could have been planned better if the development could have been foreseen from the outset.

4. Why is it necessary to elevate railroad tracks under conditions such as those which arose when Gary was established?

5. Most harbors have been improved so as to make them good landing places for large boats. Find out some of the modes of improving harbors.

6. Get a fuller description, if you can , of a Hulett unloader.

7. Does the ore which comes from the Lake Superior region look like the ore that is produced in the Pennsylvania iron region?

8. Get a description of a blast furnace and show what it does to the iron ore.

long, 250 feet wide, and 23 feet deep, with a turning basin and with draft and anchorage facilities for the largest Lake boats. These boats, which have been loaded in Duluth or Two Harbors, arrive at the Gary slip and find Hulett unloaders ready to take up the ore.

The unloaders pick up 10 to 15 tons of ore at a load and dump it into what is known as a stock trough. From this stock trough it is picked up and transferred to stock pockets or storage bins back of the blast furnaces by means of bridges which are about 500 feet long. From this point the ore is taken up by little cars which run under the stock pockets and deposit the ore in what are known as skip cars or elevators that carry it to the top of the blast furnaces. Into the blast furnaces are put also the other materials that are necessary for smelting the ore. Coke and limestone are used for this purpose. Limestone is brought into the Gary slip in great quantities by water and rail.

CARRYING THE PRODUCTS OF ONE PLANT TO THE NEXT.

The molten iron is tapped from the bottom of the blast furnace into 40-ton "ladles," brick-lined vessels, which in turn transport it to other furnaces, where it is purified into steel. These steel furnaces turn out what are known as steel ingots. As soon as the ingots cool sufficiently to be moved, they are conveyed to the rolling mills. Here they are heated to a uniform temperature in soaking pits, and rolled into the different kinds of steel products, such as rails, billets, slabs, and so on. When the molten iron is cast into molds and allowed to cool before it is changed into steel, it is called pig iron.

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1. Why is limestone used in the smelting of iron ore?

2. From what region around the Great Lakes is limestone brought to the Gary slip?

3. Show somewhat more fully than the text does the reasons why it is economical to have a series of plants located in such a way that they can pass their products along easily.

4. What is the difference between pig iron and steel? In answering this question find out something about the different methods of producing steel.

5. The process of producing steel is relatively modern. Find the dates at which some of the processes most commonly used at the present time began to be developed.

6. How does a rolling mill turn an ingot into a steel rail?

7. What is coke, and why is it used in steel mills?

USE OF BY-PRODUCTS.

The making of steel and the smelting of iron require the use of large quantities of coke. This is a product which comes from soft coal that has been heated in a closed furnace so as to drive off the coal tar and gas. In producing coke, great quantities of which are necessary for the furnaces of the Gary works, a number of by-products are produced which are of great commercial value. This by-product material is shipped in barrels and tank cars to factories in other parts of the country. Coal tar, for example, is produced at the Gary plant to the extent of 18,000,000 gallons a year. This great quantity of material is valuable because it contains the substances out of which dyes and many important drugs are made.

GREAT QUANTITIES OF MATERIAL.

Each year 5,400,000 pounds of ammonia sulphate are produced. Liquid ammonia is produced to the extent of 2,000,000 pounds a year. These valuable by-products are of special importance at the present time, because they are essential to the manufacture of certain high explosives. Indeed, during the period of the war Gary has been one of the busiest cities in the United States. It has been called upon to turn out great quantities of steel, not alone for the ordinary purposes of peaceful construction, but for shells and for guns. In addition, benzol and toluol, used in producing high explosives, are carefully collected from the coke ovens and used for war purposes.

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1. Review one of the earlier lessons in which the use of the by-products of the coke industry was discussed.

2. Find some method of showing how much space would be filled by 18,000,000 gallons.

3. In the same way show what some of the other figures given in the text really mean. In order to do this it will be necessary to find out what ammonia sulphate looks like.

4. What are some of the purposes for which steel is used in times of peace?

5. Steel has been substituted for other materials in modern industry. What are some of the substances for which steel has been largely substituted?

6. How many miles of railroad could be built from the steel rails produced by the Gary mills in a single year?

7. Show how a community which is growing gradually meets some of the needs that in Gary called for city engineering on a large scale.

The huge amounts of material that are handled in the Gary mills can hardly be understood, if reported in the number of tons produced each year. The coke plant, for example, which furnishes the coke for the blast furnaces has a capacity of 3,625,000 tons of coke annually. This requires the use of 12,000 tons of coal every day. The docks receive 4,500,000 tons of iron ore and limestone in the course of a year. The annual capacities of the different units are as follows:

	Tons.
Rails	900, 000
Billets and blooms	1, 300, 000
Slabs	540, 000
Plates	336, 000
Axles	120, 000
Merchant steel	600, 000

CITY PROBLEMS.

Bringing together all of the people who are concerned in this industry has created many problems of city life with a suddenness that is in striking contrast to the gradual growth of most cities. To build a city on the sand dunes required the development of great city enterprises. For example, this city had to be supplied with water. It built a tunnel into the lake. This tunnel is 15,000 feet in length and 72 inches in diameter. It extends under the bed of Lake Michigan to a sufficient distance to secure water fresh and free from pollution in quantities sufficient to supply a city of 250,000 inhabitants.

SOCIAL AND HYGIENIC ORGANIZATION OF THE INDUSTRIES.

The steel mills themselves have been organized, not only on the industrial side, but from every other point of view, with full regard

1. What is a billet? What is a rail?

2. Why was the water system of Gary made so much larger than is necessary for the present population of the city?

3. Does it pay an industry to provide its workers with such comforts as are described in the text?

4. Show the difference between a number of different occupations with regard to the dangers that attend these occupations.

5. What kind of instruction not given in the ordinary school would be needed by a worker in the steel mills?

6. It is pointed out that after the war there may continue to be, as there has been for the past four years, a reduction in the number of foreigners who come to take part in American industries. What effect will this have on American labor and American business organization?

to the best practices of modern industry. Provision has been made for the workers; modern sanitary equipment has been installed in all of the different works so that the individual laborers may have hot and cold water, soap and fresh towels for shower baths and lavatories. There is a hospital service for accidents or illness, and the management makes every effort to provide safeguards against accidents. The United States Steel Corporation maintains a liberal pension service for its employees in the Gary industries, the same as in its other plants.

The management of the mills has encouraged the men to organize to keep themselves in the best of condition. There are indoor and outdoor athletics. Schools have been organized within the plants to give instruction in various branches of the steel industry. These schools also make an effort to train foreigners who have recently come to the United States in the duties of citizenship. There is a newspaper published by the employees which serves as an educational influence and keeps alive community spirit throughout the works.

Around the central steel works have grown up many other industries which were attracted to the city by transportation facilities and by the possibilities of utilizing the materials that are brought to this center by the steel mills.

GARY SCHOOLS.

The schools of Gary have attracted nation-wide interest. These schools grew very rapidly with the increase in population, and

1. Service pensions serve to keep the employees of any industry in its employ for a long period. Show why this should be so.

2. Show how transportation facilities in a city help to build up industries. Can you give an example of the way in which a city has grown up around a railroad or some other means of transportation?

3. Among other industries that have grown up near Gary is a great Portland cement plant. Why should this be connected with the steel mills?

4. Why did the rapid growth of the city of Gary result in a difficult problem of school organization? In order to answer this question, find out what are the sources of money with which schools are organized and school buildings erected.

5. Compare the program of daily exercises which is suggested by the name of the Gary plan with the program in your own school.

6. How large a playground should there be around a school building having the number of pupols enrolled in your school?

were, like the steel mills, unhampered by any traditions. The work is organized on what is known as the "study-work-play" plan. Large playgrounds surround the schools, which are themselves equipped with auditoriums, gymnasiums, and shops.

The study-work-play school in Gary is able to provide equipment and time for play and for handwork, in addition to the traditional equipment and time for academic work, without increasing the school cost for equipment or for instruction. This is accomplished by alternating classes between the study, work, and play departments so that all of these departments are in use simultaneously throughout the school day. The programs are arranged so that the industrial work is optional. In actual practice it is possible to arrange a sufficient number of individual pupil programs to provide a school course to meet the needs of practically every child and the wishes of his parents.

A WELL-ROUNDED COMMUNITY LIFE.

Gary is thus unique in the history of cities. It stands to-day as a remarkable testimonial to the genius of its builders. When one considers that only a decade ago the site on which Gary is located was nothing but a wilderness, its development appears little short of miraculous. It is not so much its size that now attracts attention, for other American cities have grown with great rapidity. It is rather the many-sided development of the community life of the place that makes Gary so interesting. Most rapidly growing industrial cities are woefully lacking on the educational, recreational, and social sides. Gary has become a model for many an older community in these lines as well as on the side of productive efficiency. In short, it is an excellent example of what may be accomplished when the founders of a city realize that efficient organization of industry should go hand in hand with the development of a well-rounded community life.

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LESSON B–25. CONCENTRATION OF PRODUCTION IN THE MEAT-PACKING INDUSTRY.[1]

Sixty years ago the fresh meats that were served on people's tables were for the most part produced in the community. The local butcher purchased the animals from the farmer, dressed the meat himself, and sold it over the counter of his little shop or peddled it from a wagon to the families in the neighborhood.

However, there were geographic reasons why beef, pork, and mutton could not continue to be produced indefinitely near the place where they were used. The great, flat, fertile prairies of the central Mississippi Valley and the extensive plains farther west were so naturally adapted to furnishing the food supply of live stock that no other district in the United States could long compete with them in this industry.

SMALL BEGINNINGS OF THE MEAT-PACKING INDUSTRY.

To Chicago, lying in the center of this rich valley, there came in the sixties and seventies the men whose names have become most widely identified with meat production. Some of these men were merely local butchers; some were stock buyers who purchased live stock from the raisers and shipped it to the Eastern States "on the hoof." Still others of these "meat men" were packers as well as dealers. The packers did some slaughtering, especially of hogs, and salted, smoked, or otherwise preserved the product before shipping. This work was the original packing industry of Chicago. Compared with the great meat industries in Chicago to-day, these enterprises were small and simple. Let us see what brought about the industrial concentration which changed those small concerns into great packing houses.

SHIPPING LIVE STOCK TO EASTERN MARKETS WAS EXPENSIVE AND WASTEFUL.

Shipping stock "on the hoof" to eastern cities was a risky business, conducted in a wasteful way. The stock which was loaded into stock cars in Chicago arrived in the East much shrunken in weight. Stock became sick, was often injured, and many of the animals died on the long journey through varying weather and temperature. At certain points on the route the stock was

[1] This lesson was prepared by Leverett S. Lyon, instructor in the University High School and the School of Commerce and Administration, University of Chicago. It shows how groups of industries grow up around some central industry. The secondary industries are sources of economy and as such aid the central organization even when they are not parts of it.

unloaded, fed, watered, and rested. The expense of this process was either added to the cost of meat to the eastern consumers or was subtracted from the price which the Chicago dealers paid the cattle raisers. A little more than half of an animal can be used for meat, and in those days the balance, with the exception of the hide, was sheer waste. Thus, to the other wastes of the system had to be added nearly a half of the freight cost.

THE REFRIGERATOR CAR.

Under such circumstances it was not strange that the Chicago cattle dealers were anxious to find a method by which fresh, dressed meat could be shipped to their eastern buyers. Such a method was found in the construction of refrigerator cars. In these cars chilled meat could be sent in perfect condition to the most distant markets.

The builders of the first of these cars took great risks, because the cars were at best experiments. The railroads were unwilling to take this risk, and they believed also that many of their live-stock cars would be rendered useless if the refrigerator cars were satisfactory. As a result of these and other circumstances, the packers themselves were compelled to build refrigerator cars. Thus the business of the stock dealers was expanded into a new but an allied industry, that of transportation. Meat dealers were no longer merely stock dealers and butchers. They became owners of transportation facilities. This phase of the packing business has developed until now at least 25,000 refrigerator cars are owned and used by the Chicago packing plants.

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1. Ask your father or grandfather to tell you how fresh meat was secured when he was a boy. Ask him to compare the quality of meat then and now and to tell you of the difficulties of securing it in good condition at all seasons of the year.

2. The scientists who devised artificial methods of freezing must in part be thanked for the ease with which we secure fresh meat to-day. Why?

3. Explain what is meant by saying that the Mississippi Valley is naturally adapted to raising live stock. To what else is this valley adapted? Are other areas especially adapted to other purposes? Give examples.

4. Look up meat packing in the encyclopedia and learn what you can of the industry. What can you learn in an encyclopedia of the men whose names you associate with fresh-meat products?

5. Why does the Food Administration ask the people of this country to be especially saving of beef and pork?

ONE EXPANSION LED TO ANOTHER.

The perfection of the refrigerator car soon carried the Chicago packers into a big business. If dressed meat was to be shipped East, packing houses had to be established. Clearly the greatest economy in shipping would result from slaughtering the stock as near as possible to the ranches where it was raised. As Chicago lay in the very heart of the stock-raising country, had a natural harbor at the foot of the Great Lakes, and was the terminal for the railroads both to the East and West, it was the location where the work of slaughtering and dressing inevitably concentrated. Thus, the adoption of the refrigerator car, which resulted from the efforts of stock dealers to avoid the wasteful methods of shipment, in turn forced them into slaughtering on a tremendous scale. The refrigerator car was thus the foundation of the concentration of meat packing in Chicago. Its introduction also made it possible for the Chicago packers, by establishing branch plants in Kansas City, Omaha, and other western cities, to keep close to the ranches as the cattle-fattening industry extended westward.

STILL FURTHER CONCENTRATION BECOMES DESIRABLE.

When the Chicago packers began the slaughtering business on a large scale it became necessary to find methods of selling their products. Many of their old customers for live stock would not buy dressed meats, as they were themselves in the slaughtering business and were thus in competition with the growing Chicago industry. Yet it was very necessary that the fresh meat which was produced every day in Chicago be distributed rapidly and efficiently. Otherwise car space would be consumed for storage and dressed meat would accumulate. The accumulation would thus result in waste and great expense. Moreover, many people

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1. Make a list of the wastes of the old method of shipping live stock "on the hoof."

2. Does it seem reasonable to you that the railroad would hesitate to build refrigerator cars while these were still in the experimental stage?

3. Find out what you can about refrigerator cars, early experiments, methods of packing, etc. Detail one member of your class to visit a local meat dealer or, if possible, an agency of one of the packing houses, and to inspect a refrigerator car.

4. The refrigerator car was the foundation of the western packing industry. Explain what is meant by this statement.

5. The improvement of the refrigerator car and the wastes of the old system pushed the packers into new industries. Is there any truth in this statement? Explain.

living at a distance from Chicago were inclined to believe that meat could not be conveyed to distant markets in an edible condition. The local butchers were not slow to encourage this belief.

These conditions made it desirable for the Chicago packers to establish branch offices throughout this and other countries. These branch offices were controlled from Chicago, and soon made Chicago dressed meat a recognized standard. They have grown in number until now each of the large concerns has selling agencies in as many as 400 cities in the United States and in many cities abroad.

Nor was this all. Some of the Chicago packers desired to ship only dressed beef, but they found that the market keepers who bought beef from their agents in other cities demanded that they be supplied with pork, mutton, and other products as well. The demand upon the packers' agents for a wider variety of supplies was not the only force impelling the packers to widen the scope of their business. The packers discovered that, once their large plants were built, they could handle pork, mutton, and other food supplies without very great increase in their total overhead costs, and by so doing they were able to sell each unit of their product at a greater profit or a lower price.

Overhead costs incurred in operating refrigerator cars also helped to induce the packers to expand further the size and variety of their ventures. When the refrigerator cars were first sent to various parts of the country, they were returned empty. Here, plainly, was a great waste. It cost nearly as much to haul the cars empty as it cost to haul them loaded. The packers, therefore, looked about for goods which could be brought under refrigeration on the return trip and sold in Chicago. A system of buying was worked

1. The perfection of the refrigerator car almost forced the Chicago packers into the slaughtering business. Explain.

2. What advantages had Chicago that caused it to assume leadership over such cities as Cincinnati, Kansas City, and Omaha? Why did the packers later find it very advantageous to establish branch plants in Omaha, Kansas City, and other western cities?

3. When the railroads from the East were built to Chicago the business opportunities of the Chicago region became enormous. Explain this statement. Do you think the conditions that existed at that time account in part for the number of men who advanced rapidly from insignificant posts to important positions?

4. Does it appear to you that business opportunities for persons without special training are as plentiful as they were in the days of the "expanding West"?

out, and eventually fruit, butter, eggs, cheese, and vegetables of many sorts were being brought from every part of the country in the returning refrigerator cars. One way of making sure that these goods could be disposed of when they reached Chicago was to establish a preserving and marketing organization. This was done by more than one of the large packing plants. Thus the demands of their customers and the pressure of overhead costs induced the packers to become merchants in a great variety of goods.

THE USE OF BY-PRODUCTS CAUSED FURTHER CONCENTRATION.

As we have seen, the early methods of dressing meat discarded as waste nearly half of the slaughtered animal. But science was busy, and discoveries one by one showed valuable uses which could be made of the parts of animals which had been thrown away. It was found that the horns and hoofs could be used for buttons, knife handles, and cane handles; dried blood commanded a high price as a fertilizer; parts of the bones and cartilage could be turned into glue. A new invention made it possible to use parts of the fat, hitherto almost useless, for the manufacture of oleomargarine. Eventually every minute scrap of the slaughtered animal was put to some profitable use.

To find a market for some of these by-products, however, it was necessary that they be combined with other articles into a manufactured form. This impelled the packers into a further expansion. To utilize their glue, for instance, the manufacture of sand paper, which takes large quantities of glue, was undertaken. Soap factories, glue works, curled-hair industries, fertilizer plants, and pharmaceutical laboratories were constructed to make the use of various by-products most profitable.

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1. What difficulties had the packers in marketing their products? How were these difficulties overcome? Explain how this activity led to increased concentration of production.

2. Look at the notice that is printed on the back of a Victrola. Make a note of the various matters that the manufacturer tries to control after the machine leaves his hands. Why should a manufacturer try to control these matters? Does this appear to you to be an attempt at further concentration? A recent court decision holds that the notice referred to is not binding at law. Does such a decision suggest that the law favors or opposes concentration?

3. In what ways did overhead costs make it advantageous to the packers to slaughter all kinds of live stock? Would one be justified in saying that overhead cost was one cause of concentration in the packing industry? Explain.

Thus the business of meat packing developed from simple beginnings into the form of tremendously concentrated production. It is an industry concentrated in two ways. First, it is large scale; that is, the various plants are of gigantic size. Second, it is integrated; that is, related industries are concentrated into one. At least two of the largest packing companies now have resources of over $200,000,000 each. One of the largest operates 16 vast plants covering a total of 300 acres, with a daily killing capacity of 98,000 animals. Forty-five thousand workers are employed by this company, which sells 3,000 products through 416 branch houses in this and at least 12 foreign countries.

This illustrates a kind of business organization which is typical of modern times. Where many allied industries are integrated into one organization, there is an advantage from the fact that each part can be planned to work in harmony with every other part. A small business must establish relations with many other enterprises. Sometimes this can be done only with difficulty. An integrated industry includes many of the other enterprises, and harmonious action is easy. If a business has plants in several parts of the country, it can ship goods to purchasers from the nearest one, thus saving on cross freights. Also, when business is dull it can close certain plants and at the same time keep other plants running at full capacity, thus reducing overhead charges.

Perhaps the greatest advantage which comes with large-scale production is in the use of by-products. The small-scale butcher must throw away nearly half of his raw material, while the packer utilizes everything.

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1. A recent financial statement published by certain packers showed that during one year the average price paid for a 1,000-pound steer was $62.50. The meat was sold for $58.65; that is, about $4 less than was paid for the live animal. The packers, however, received $15.06 for the by-products from the animal. What do these figures indicate concerning the advantage of manufacturing by-products? Does it appear that it is advantageous to the users of fresh meat to have the packers extend their enterprises to the making of by-products?

2. Explain how the utilization of certain by-products has led to still further concentration of production.

3. Explain what is meant by large-scale production and integrated industry.

4. Give some other examples of the use of by-products in manufacturing and show how in all of these cases there is an economy from the use of these by-products.

All of these advantages are increased by the fact that the large concern can afford to make constant experiments looking to improvement and it can employ the most competent managers.

WHY THE SMALL FIRM PERSISTS.

In spite of all these advantages the small firm still persists in many industries. Large-scale production depends upon specialization and machinery. Specialization and machinery can succeed only when there is a large market in which the buyers are willing to take wares exactly alike. There is not such a market for all goods and this gives the small firm a chance. In producing fitted clothes, the finest rugs, the best bound books, the finest furniture, and all forms of art work the large plant can not compete with the small one. So it is in producing all wares where the individual taste of the user must be pleased. Wherever the personal relation between buyer and seller is important the small business has the better of the race, and as a result the small local store is not easily crowded out.

THE PACKING INDUSTRY ILLUSTRATES A TENDENCY IN MODERN BUSINESS.

The changes in the packing industry are only one illustration of what has been occurring in many branches of American business during the last half century. There has been a very strong tendency toward producing goods in large establishments and toward a drawing together of related industries into one concern. A comparatively few large oil companies supply most of our gasoline and kerosene. They own not only wells and refineries but pipe lines, tank cars, and sales organizations. The largest steel company manufactures more than half of all the steel produced in the country and controls ore fields, steamship lines, and railroads

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1. Have different members of your class get all the data they can from an encyclopedia concerning the Standard Oil Co., the American Tobacco Co., and the United States Steel Corporation, and report concerning these companies as examples of concentrated production. Are they large scale? Are they integrated?

2. Make a list of as many advantages as possible that come to the large-scale business. What advantages, if any, come to the users of goods from concentrated industry?

3. In what kinds of business does the large organization find it impossible to compete with a small firm?

4. Explain why a department store has an advantage over a collection of small stores, each of which specializes in some one kind of merchandise.

as well. Railroads have of course concentrated the work done by almost every other form of carrier; department stores and mail-order houses, what was formerly done by many stores. In some parts of the country large farms are replacing the small homesteads.

Government reports show that between 1850 and 1910 manufacturing plants grew to such an extent that the average number of employees in each plant increased 225 per cent. In the same period the average amount of money invested in these plants increased 1,480 per cent. The causes for this concentration are mostly in such advantages of large-scale production as we have noticed in our study of the packing industry.

Large plants can make the best use of machinery. It is not profitable to buy very expensive machines unless they can be kept in constant use. But if they can be used continuously, they are very productive. The effort to take advantage of machine power therefore tends toward large-scale production.

Large establishments can also profit most from specialized work. They have enough work of every kind to keep men busy at very small tasks at which they become very skillful. In the packing plants 8 or 10 men work on the hide alone.

Many small firms grow up as satellites of the large plants. On the flanks of great packing houses, for instance, are swarms of smaller concerns that thrive by making repairs, building means of conveyance, using surplus by-product materials and in other ways making themselves complementary to the larger concern. Great advantages to society have come with large-scale production. Where monopoly has not been allowed to exist the reduced costs have been passed on to a great extent to users of goods, and the utilization of wastes has not only given us new goods but lowered the costs of the old ones. Many disadvantages to society have also come with concentration of production. However, they have been discussed in our study of machine industry or are centered in concentration of ownership or control and are considered in another part of this study.

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LESSON B-26. CONCENTRATION IN THE MARKETING OF CITRUS FRUITS.[1]

The best known and most important citrus fruits are lemons, oranges, grapefruit, and citrons. There are two very important facts in connection with the citrus-fruit industry. First, the production of citrus fruits is confined to a very limited area and, second, the fruit is sold in all parts of the United States and Canada. These two facts have given rise to the marketing problems with which this lesson is concerned.

WHERE CITRUS FRUITS ARE PRODUCED.

The growing region for citrus fruits in the United States is to be found concentrated in two States, Florida and California, with smaller areas in southern Arizona, Louisiana, and Texas. Even in the two banner States citrus-fruit culture is limited to small sections. There are five counties in southern and one in northern California that are especially adapted to citrus-fruit growing. In Florida three southern counties furnish by far the greater part of the crop. It has been said that "no other horticultural industry of equal extent is so compactly located."

The reasons for this concentration are well known. The soil "must be at least 4 or 5 feet deep; it must be free from hardpan or strata of coarse gravel; it must be well drained; and it should be so situated as to make irrigation easy." Climate, however, is the greatest barrier to the extension of the producing area. The citrus fruits thrive only in a tropical or a subtropical climate, and they do better in a subtropical climate. The groves nearest to the line where the frequency of frosts prevents commercial growing are those which produce the finest fruit.

MARKETING PROBLEMS IN THE CITRUS-FRUIT INDUSTRY.

Although the region of production for citrus fruits is compact and limited in extent, no fruit is more widely distributed as an article of consumption. Lemons, oranges, and grape fruit to-day find their way into practically every town of any importance in the country. This is the more remarkable because of their highly perishable nature. They require the greatest care in cultivation, in picking, handling, packing, and shipping in order

[1] This lesson was prepared by Carson S. Duncan, assistant professor of commercial organization in the University of Chicago. It describes the organization of the California Fruit Growers' Exchange, the most scientific and successful cooperative marketing organization in the world. It shows how concentration can overcome the difficulties of marketing at great distances from the source of production.

to reach the consumer in good condition. For these reasons no other industry presents more difficult problems or requires a more skillful distribution and marketing of the crop.

Before the formation of the California Fruit Growers' Exchange the only way in which the growers of citrus fruits could get their products to market was through middlemen. These included brokers, commission merchants, jobbers, soliciting agents, and local buyers. But none of them proved satisfactory. In the first place, the expense of selling—that is, getting the fruit from the producer to the consumer—was too high, amounting to one-half, or more, of the price which the consumer paid for it. Such very high costs for distribution increased the final price so much as to reduce demand.

UNNECESSARY MIDDLEMEN.

Not only was the old system too costly; it was also too cumbersome and too complicated. Farm produce often passed through the hands of three or four middlemen before it reached the consumer. Each of these middlemen had to be paid for his services and this added to the final price. There were freight charges, expenses for refrigeration, and storage charges; there were brokers' commissions, jobbers' profits, and retailers' profits. "It becomes bewildering to the average person when he finds there are no hard and fast lines which separate any of these agencies from another and that their functions overlap or may be identical."

Another difficulty was the distrust in which the producer held these middlemen. Against the commission merchants especially, the producer felt keen resentment. These middlemen acted as agents for the producers; that is, the growers of fruit shipped it to the commission merchants who were located in the large market

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1. Do any fruits other than the citrus fruits have localized production?

2. Where does your local supply of apples come from? Berries? Plums? Pears?

3. Are apples, pears, plums, and berries as carefully shipped as citrus fruits?

4. Does your local supply of citrus fruits come from California or Florida?

5. Consult a local retailer or commission man and find where and from whom apples and berries are bought. How many middlemen handle such fruit after it leaves the farmer's hands?

6. Ask your local dealer from whom he buys his citrus fruits. Find out, if you can, how many middlemen have handled them.

7. Are the citrus fruits shipped in refrigerator cars?

centers. These men used their own judgment as to when and how to sell. It happened too frequently that the commission merchants sent false reports to the producer who sent them the fruit, that it was spoiled, or that market prices were low, and the producer had to accept the commission man's word, since he had no means of checking up these reports. Therefore the whole group of middlemen fell under suspicion.

PRODUCER LACKED MARKET INFORMATION.

The most fundamental difficulty, however, was that the producers had no means of knowing in what markets there was a scarcity and hence high prices, and where there was an oversupply. He shipped his fruit without knowing what price it should bring in the market to which it was directed. Whatever information he received regarding the condition of his fruit and market prices was through the middlemen. Sometimes he even sold his fruit while still on the tree to agents of the commission men. In short, there was no proper effort to adjust demand to supply by either the middleman or the producer.

The producer never knew how big a crop could be grown profitably, because he had no way of forecasting what the total demand for his fruit might be. There was, moreover, no incentive for the middleman to increase the general demand for citrus fruits or to widen the market, for he had many other products to sell. And yet it was these middlemen—the wholesalers, jobbers, brokers, commission merchants, and retailers—who were responsible for selling the fruit, for seeing that the season's output was disposed of. This being the case, the producers had no way of learning how much fruit would be demanded. As a result, there would often be a total crop so large that the market was oversupplied, and all the fruit then had to be sold at a price that gave the producer no profit.

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1. How much variation in the price of oranges is there in your community during the season? How much with lemons? Grapefruit?

2. How many different grades do you find in the case of oranges? Of grapefruit? Of lemons?

3. Do you find that all local dealers sell the various grades at the same prices?

4. Ask your local dealer what fixes the prices of citrus fruits.

5. Do you find in the newspapers any quotations or market reports on the prices of fruits?

6. How much waste is there in a box of oranges as a rule? Does the grower, merchant, or consumer suffer the loss?

NO STANDARDS FOR GRADING AND PACKING FRUIT.

Among the producers there was no standard method of grading and packing the fruit. Each farmer did as he thought best. There was no organization to educate the growers in the best methods of cultivation, in the best ways to prune and spray the orchards, nor in the need for uniformity in grading and packing the fruit. The individual farmer also had to pay high freight charges, because he usually shipped only small lots.

THE CALIFORNIA FRUIT GROWERS' EXCHANGE.

To meet all of these varions difficulties, a movement was begun in the early nineties to organize the producers of citrus fruit into cooperative associations. It was the purpose of these associations to obtain uniform and good methods in growing and handling the fruit and to provide facilities for marketing it. Their aim was to cut out the middleman. This was to be accomplished by building up an organization of growers to do for themselves what the middlemen had been doing for them. The result was the California Fruit Growers' Exchange.

The California Fruit Growers' Exchange is composed of one central exchange, 17 district exchanges, and a large number of local producers' associations. The central exchange, on the one hand, represents the producers and on the other directs the business of selling. Through it the growers and sellers communicate. The seller receives their orders from the growers and are thus controlled by them. If one will think of a telephone exchange into which lead a great many wires and out of which lead a great many more, one will be able to see much more clearly the services of the central exchange.

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1. Do you think it necessary for citrus fruits to be as carefully wrapped as they are? Does the wrapping prevent freezing? Does it prevent bruising?

2. What is printed on the wrapping paper? What is the purpose of this printing?

3. Can you think of any way in which the trade-mark on the wrapping paper might prove misleading?

4. Do you think too careful wrapping is wasteful and extravagant? Who pays the cost?

5. Are citrus fruits more carefully packed and wrapped than other fruits which your local merchant sells? Is there less waste?

6. How much does a box of oranges weigh? Is it more or less than a bushel?

In charge of the central exchange is a general manager elected by a board of 17 directors. Each director represents one of the 17 district exchanges scattered through orange-growing regions. Each district exchange, in its turn, is made up of representatives from the local growers' associations. There are 115 of these local or community associations containing from 40 to 200 members each. There are now 8,000 producers who are members of the local associations.

Since the growers elect the directors of the district exchange by sending one director from each local association, and the district exchanges elect directors of the central exchange, who choose the manager, it is clear that the growers control the entire organization. Besides, each organization—local, district, and central—is a nonprofit corporation. They exist merely to transact business for the growers and do not require a separate profit, which would add to the price of the fruit. They receive only expenses and the chances for profit or loss go back to the growers.

THE SELLING ORGANIZATION.

The sales organization by means of which the growers are able to send their fruit to market and to sell it, is, of course, under the direction of the central exchange. There are two general divisions, one for marketing oranges and another for lemons. Each of these is in charge of a sales manager. The whole country has been divided into six territorial divisions, each of which is looked after by a sales manager. The territorial divisions are further subdivided into districts in the charge of managers. The district managers are located in the principal cities throughout the country. This cooperative selling organization stops with them, since they sell to brokers and jobbers in those trade centers. From this point on the fruit passes into the regular channels of trade, reach-

1. If fruit is grown in your community, find out to whom the grower sells it.

2. If sold to local merchants, is any such fruit shipped out of town? If so, to what destination?

3. If sold to a local dealer, where does the dealer dispose of the fruit? Does he sell to another dealer or directly to consumers?

4. Find out how many middlemen handle this fruit before it reaches the consumer in the city.

5. Do the growers rely upon the dealers for all their information as to prices?

6. Do any of the fruit growers in your community ship their fruit directly to the larger cities? If so, to whom is it consigned?

ing the consumer through retail stores, fruit stores, fruit stands, or street venders.

From this survey of the sales organization it is seen that the control is centralized in the central exchange. Each sales manager is responsible to his superior until the central exchange is reached. Thus the manager of the central exchange controls all sales managers, but he is in turn controlled by the growers, so that the control of the entire organization is in the growers' hands.

THE WORK OF THE VARIOUS DEPARTMENTS.

This control is made clear by a description of the duties and responsibilities of the various departments in this great cooperative organization. Let us begin with the local associations of growers.

It is the duty of a local association to build a packing house at a convenient spot along the railroad serving its particular community; to supervise the packing, grading, and loading of fruit; to assist the growers by securing laborers, by arranging for pruning and spraying, by education in the best horticultural methods.

The duty of the district exchange is to order cars and to see that they are in the right place when needed; "to keep a record of the carloads shipped by each local association and their destinations, to inform themselves through the central exchange of all phases of the citrus marketing business, to place the information before the associations, to receive returns for the fruit through the central exchange, and to return the proceeds to the association."

The central exchange has as its duty to furnish market information and marketing facilities to the district exchanges and associations. Through its organization of sales managers it keeps in daily touch with conditions in the markets all over the country. It sends to all the associations daily bulletins containing the latest market news. It also acts as legal representative

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1. Can you think of any disadvantages in the direct marketing of fruit by local growers?

2. In what quantities is it shipped? If shipped in larger quantities, how much freight or express would be saved?

3. Since the dealer can ship in large lots, is it not possible for him to make a profit for himself and at the same time pay the grower as much as the grower would receive if he did his own marketing, paying his own shipping bills?

4. Is direct marketing by the grower likely to mean a larger or smaller amount of spoiled fruit?

5. Could an independent grower ordinarily use refrigerator cars in making his shipments?

for the organization and carries on advertising to increase the demand for citrus fruits. Its expenses are paid by the district exchanges, the share of the expense met by the exchange depending upon the number of boxes of fruit shipped by it. These expenses are in turn passed on to the growers.

The whole organization is thoroughly democratic in its nature. Membership is voluntary. A grower may withdraw from an association at the end of the year, an association may withdraw from a district exchange, and the district exchange may withdraw from the central exchange. The grower exercises control over all matters. No sale of his fruit is ever made without his direct consent. At any transfer point along the railroad he may order the car of fruit diverted from its original destination to a better market, upon the basis of later news received by him through the sales organization. The sales manager is thus only the agent of the grower, can sell only at his command, and his interests are the same as the grower's interest; the higher the price the more prosperous they all are.

By means of the daily telegraphic reports which the central exchange receives from its sales managers it knows the price of oranges, lemons, and grapefruit in the important markets all over the country. This information, sent on to the growers through the daily bulletins, makes it possible for them to adjust the supply to suit conditions everywhere. There can be no glut in one market and at the same time a shortage at another. In addition, there can be no deception by dishonest dealers, for the producer now markets his fruit through his own representative, and he is kept fully informed of market prices and changes everywhere.

THE ONE WEAKNESS IN THE ORGANIZATION.

Though the organization has thus lessened the cost of distribution and equalized the supply of citrus fruits everywhere, it has

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1. Is the fruit in your community picked by hand?

2. Are the trees sprayed? If so, at what time of the year?

3. Send to an agricultural college for material on fruit raising. After studying the material compare local methods with those recommended by experts.

4. In what ways do you think fruit production in your community might be improved?

5. In what ways do you think the marketing of fruit in your community might be improved?

6. Do you think that a cooperative marketing exchange would be advantageous in your community?

one point of weakness. Growers not only sell at will, but they also produce without regulation. The effect has been the planting of so many new orchards that within the next few years the supply of California oranges will be increased 50 per cent and the supply of lemons doubled. It is doubtful whether the demand will increase at an equal rate and whether this greatly enlarged output can be sold at a profit. Thus there is no adjustment of future supply to demand.

RESULTS OF THE FRUIT GROWERS' EXCHANGE.

The California Fruit Growers' Exchange is the great cooperative organization that has developed to meet the difficulties in the marketing of citrus fruits. For 22 years it has carried on its work with marked success, especially in the past decade. In 1916 it handled 67 per cent of the citrus-fruit crop of California. There are about 40 other cooperative associations and grower-shipper associations dealing in citrus fruit. Together these handle about 85 per cent of the entire crop.

This system of marketing has greatly reduced the cost of distributing citrus fruit, has brought about uniform and scientific methods of grading, and has developed varieties that ripen throughout the year. It has obtained lower freight rates through enabling growers to join together and ship a carload at a time. It has offered a better fruit to the consumer at a lower price than ever before. Thus the growers, while retaining their independence of will and action, gain all the advantages and economies of large-scale distribution. By means of centralization in a cooperative exchange, they can meet the buyers in the market on equal terms without losing a whit of their individuality and independence.

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LESSON B–27. GOOD ROADS.[1]

Wherever a community grows up there will be paths or roads or waterways which make it possible to carry goods back and forth and to set up neighborly relations. As the community gets larger and more prosperous, the lines of communication become better. There is no clearer indication of a strong community spirit than good roads or streets.

MEANS OF TRANSPORTATION REFLECT COMMUNITY DEVELOPMENT.

Think of the difference between a well-paved city street and a muddy, unkept country road, and the relation of good roads to community life will be clearly brought to mind. The former gives evidence of the cooperative effort of many people who have united to make trade and personal travel easy. The latter gives equally clear evidence of community life which is undeveloped, either because the people in that district are few or because they are backward.

What is said about good roads could be repeated with regard to other means of transportation. Good railroads or good trolley lines are either the results of a demand for connections between existing communities or they soon lead to the springing up of settlements because of the ease of communication.

THE MOVEMENT FOR GOOD ROADS.

The value of a good road to all who use it is beginning to be recognized to such an extent that there is at the present time a widespread movement to build roads in all parts of the country. State legislatures are petitioned to appropriate great sums of money for roads, and county and town boards are formed to take care of short local roads for which the State can not properly be asked to pay. Let us take up a case which will show how important good roads are for the development of a country.

GOOD ROADS ECONOMICAL.

A progressive farmer in central Missouri discovered the importance of a road by the following reasoning. He noted that the road from his farm to the nearest railway shipping point, which is 4 miles away, was impassable to a wagon loaded with grain

[1] This lesson was prepared by Clifford H. Moore, instructor in history, State University of Iowa. It emphasizes the fact that social relations are dependent on adequate means of transportation. There can be no organization of community life without roads and other avenues of trade and social intercourse.

during three months in the year. Over this road he must haul the 5,000 bushels of corn which his farm produces. As matters stand now, he must do his hauling when the road permits. This means that he has to get his corn harvested and hauled in a limited period in order to use the road when it is open. Since he must do his work in a limited time he has to hire for the short time more men and have more horses, and after the road becomes impassable he finds that the men and the horses can not be employed to advantage and not all of them can be turned off. It would be better for him if he could employ a few men and horses steadily and could be sure that he could do his hauling whenever he was ready. As it is he hires three men and has four teams of horses. He rushes the hauling through at the same time that he is doing the harvesting. One man averages 40 bushels of corn a day, husked and taken to market. If the farmer could distribute time and work better, two men beside himself could husk and "pen store" 180 bushels a day, leaving the hauling till later. The crop would be safely out of the field sooner than when four men work at both husking and hauling. Later the hauling could be done without interfering with harvesting or other important work. The farmer could get on with one team less and could give steady employment to his two men. The result would be that he would get better men at a better rate.

GOOD ROADS COST MORE BUT PAY IN THE END.

It is thoughtful consideration of this sort that has led many a farmer to become an advocate of good roads. To be sure, good roads mean higher taxes, but even from a purely financial point

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1. "The first highways of commerce were the seas." Find out from your history what early nations were especially noted for their commerce and indicate why their development took place in this direction.

2. When people have gone into a new country, they have usually followed the course of streams. Explain why this should be so.

3. Describe some of the different kinds of roads that you have encountered in your experience and explain why the conditions that you have seen should be good or bad.

4. Why should the streets of a city be paved?

5. Explain what are the advantages and disadvantages of a good railroad track as a means of economy in transportation. In this connection explain why modern railroads have spent a great deal of money establishing a uniform grade and eliminating curves in their tracks.

6. It used to be the custom for each man to work out his road tax by improving the road in front of his own house. Why is this an unsatisfactory method of caring for a highway?

of view it pays the community to build good roads. Mr. Houston, the United States Secretary of Agriculture, has said that it costs 23 cents to carry a ton one mile on the average country road, while it would cost only 13 cents if the road were properly improved.

A ROAD IS A COMMUNITY ENTERPRISE.

A road can not be built by a single man; the community as a whole must unite in the enterprise, first, because it is the community as a whole which benefits, and, second, because in all large undertakings cooperation of many people is necessary. Indeed, road making is from every point of view an excellent example with which to show the meaning of community cooperation.

SOCIAL ADVANTAGES FROM A GOOD ROAD.

It is not alone in financial economy, however, that a good road benefits a community. A good road makes it possible for people to get their mail more regularly, to go to church and social meetings and school more regularly. Neighbors see more of each other and in this way all the advantages of living in close community relations are obtained. Where roads are poor the country family is cut off from all kinds of social opportunities. A few years ago the Rural Life Commission, which studied the conditions surrounding the life of farmers, laid great stress on the necessity of providing rural families with means of entertainment and social contact with neighbors. The report of the commission gives a number of cases of farmers' wives in backward regions who had become utterly discouraged and had even broken down in health because they had no relief from the routine of their lonely lives. Good roads mean easier trips to town and to other homes.

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1. Make a list of the different items of expense that enter into the production of a crop of grain.

2. Indicate the points at which a farmer must be most careful in economizing in the cost of producing the crop.

3. Why is it possible to get a better grade of work done when one employs workmen steadily for a long period of time?

4. Why is it necessary to get the corn crop in as rapidly as possible in the autumn?

5. The opening up of the grain fields of the Northwest is due to the building of railroads. Show how this statement carries out the same principle that is illustrated in the text.

ADVANTAGES REFLECTED IN VALUE OF LAND.

That the advantages of good roads are very real is seen from the fact that the value of farm lands goes up with improvements in roads. A survey of the State of Ohio by the Department of Agriculture supplies definite evidence of the truth of this statement. In this survey 43 counties were shown to have more than 10 per cent of the roads improved and 16 counties to have less than 10 per cent. The average value of the land in the 43 counties with improved roads was $65.79 per acre, whereas in the 16 counties without improvements the average value was $45.50. In North Carolina 17 counties with more than 10 per cent of their roads improved averaged $15.62 per acre, while the 74 counties with less than 10 per cent averaged $10.57 per acre.

NATIONAL SUPPORT FOR GOOD ROADS.

The question naturally arises as to the means by which better roads are to be obtained. Recently Congress passed a law designed to aid in solving this problem. Briefly, the law provides for the cooperation of the States and Federal Government in the construction of rural post roads. Appropriations by the Federal Government are limited to 50 per cent of the total cost, such appropriations to be apportioned according to population, area, and mileage of rural delivery and excellence of the routes. The national appropriation thus helps local communities and at the same time, by recognizing excellence as one of the reasons for appropriating money, stimulates the local community to vigorous efforts.

Local initiative has also been aroused in this campaign. There have been many reasons advanced for more vigorous efforts in

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1. Recreation is quite as important to the development of a community as industry. Explain this statement and describe some of the provisions made in the community in which you live for recreation.

2. What are the forms of recreation possible in a rural community as distinguished from an urban community?

3. How does the improvement of social conditions come to affect the price of land?

4. What are some of the other conditions that affect the price of land? In answering this question include railroad transportation or transportation by canal and also other advantages that come with the growth of the community.

5. In building railroads across the continent, companies have depended very largely on aid from the National Government. Why should this type of aid be given earlier than aid for the building of highways?

road building. One man wants a smooth road for his automobile; another has reasoned out the importance of a good road for the marketing of his crops. The merchant in the town comes to understand that good roads mean more trade. Whatever the motive of the individual, the importance of roads is coming to be recognized and people are bestirring themselves to secure them.

HOW MOUNT AYR, IOWA, ATTACKED THE PROBLEM.

There are various ways of getting a local community to take up the problem. A unique method was that adopted at Mount Ayr, Iowa. A banquet was arranged and all the farmers were induced to attend. At this banquet the president of the commercial club offered $350 in cash prizes to the organization of farmers which accomplished most in improving the portion of the road leading from any given section of the country into the town. The final result was the formation of seven road clubs. Road tools sold at a premium. In one township it became necessary for the owners of a road grader to take off its wheels at night and lock them in a cave to prevent the grader from joining another road club.

Highways that had been but neglected by-paths were converted into good roads before the time for the final judging. Brains were combined with labor to get results. Men met at a convenient home in the evening and discussed methods for working the roads. One group copied the work of another, and as a result uniform methods of road building were worked out. The result was not only good roads for that part of the State, but the development of methods of road building which the Iowa highway commission adopted for the improvement of roads throughout the State.

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1. Associations are frequently organized to promote some public interest. Make a list of a number of these associations.

2. Farmers' associations are of great political importance in certain parts of the country. Why should a farmers' association have political influence?

3. Reference is made in the text to a highway commission. What is a commission and what is the source of its authority and power?

4. What other public officers are charged with responsibility for highways?

5. Who owns the highways?

6. When a waterway is used for commercial purposes who has authority over the boats on the waterway? Who is responsible for keeping the waterway in navigable condition?

7. When ships sail on the ocean under whose control are they?

8. Who has jurisdiction over a harbor and the boats in the harbor?

INTELLIGENT ROAD BUILDING.

Skill in road building is required to enable a community to get what it needs with the least possible expenditure. A moment's consideration will make it clear that a road which is to be traversed day after day by heavy trucks traveling 30 miles an hour must be very differently constructed from a road which has to carry only comparatively light farm wagons drawn at a slow rate by horses. A road on a hillside will have to have a different construction from one which runs through the valley and is not so likely to be washed out by the rains. A road through a country where frosts are severe and frequent will present a different problem from a road in a part of the country where there is little frost.

There are other problems in road building. Where shall material be found? One case will illustrate both the wrong way of meeting this problem and the right way. Several miles of macadamized road were built by a certain community in which were many enthusiastic but wholly inexperienced men. The materials were brought from a distance at great expense. Within a very few years certain portions of the road were completely cut to pieces. In rebuilding the worn-out sections the services of an engineer were secured. He accomplished the reconstruction by the use of gravel from the vicinity at almost one-half the former cost per mile. If the community had only taken expert advice when they first built the road, they could have saved a great deal of money and would also have gained much in laying out all their plans, for road building is a complex art and requires the judgment of well-trained engineers.

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1. Why should a road have to have construction for vehicles that move at a high speed which is different from that which would be sufficient for vehicles that go slowly?

2. What devices are used on hillside roads to prevent them from being washed out?

3. How deep does the ground ordinarily freeze in winter?

4. What relation has the depth of freezing to the way in which foundations of buildings and roads are laid?

5. Would it be economical to put down a brick pavement along an ordinary country highway?

6. What are some of the materials used in ordinary road construction in your own neighborhood?

7. Look up the history of John Macadam and find out at the same time some of the reasons why the road which he devised has been so generally used.

METHODS OF ROAD BUILDING.

It is not possible to describe here the different methods of road building. One method very commonly used is named after a Scotchman by the name of John Macadam, who constructed roads in the early part of the nineteenth century by using crushed stone. In this method the roadbed is cleared and graded and a layer of crushed stone 4 to 8 inches thick is spread evenly over the surface. A top layer of so-called "chat" or finely crushed stone is spread over the lower layers of coarse stone and the whole is rolled and tamped until a smooth solid surface is obtained.

In some cases it is found desirable to blanket the macadam with a coat of tar or asphalt. Where travel is heavy, concrete, cement, and bituminous concrete are used. On other sections and often on city streets where traffic is still heavier block pavement or brick pavement is used. This is also suitable for steep grades.

The intelligent use of these different methods will put the most expensive road where the wear is heaviest. There is no need of spending more in construction than the use of the road justifies.

If the traffic is light, the macadam is entirely adequate. The more expensive constructions should be used only where needed. The same kind of statement applies to bridges. If a bridge is to carry a load of 50 tons at the most, there is no reason for using girders which will carry 500 tons. The construction in all cases is economical only when it fits the demand which is to be made on it.

THE HISTORY OF ROAD CONSTRUCTION.

The importance of good roads to a nation and community is fully illustrated in the history of earlier peoples who depended

1. Find out something about the Roman military roads and the methods of constructing them.

2. What effect have military roads had on the history of commerce?

3. What great historical commercial centers grew up along the pathways of commerce?

4. Would it be possible for a great city to exist if the only means of transportation were stage coaches or street cars drawn, as they used to be, by horses?

5. It is said that after the war mail routes will be established with airplanes. What are the advantages of air routes over other routes of transportation?

6. A large part of Germany's success on the Russian front is said to have been due to the ease with which she could move her troops, while the Russians had no adequate facilities. Explain why this is so.

on roads for all their commerce, as well as for the movements of their armies, and also in the events of the recent war.

Darius the Great built military roads and was able by means of these to hold his Empire together. Without good roads the magnificent Roman Empire would have been impossible. These roads were built in large part by the armies during periods of peace. Russia's collapse during the present war was in large measure due to inadequate transportation facilities. An abundance of grain in certain parts of that nation is no safeguard against inadequate provisions for the battle front or famine in other districts. Furthermore, the movement of troops on the eastern front has been very slow and clumsy, because of lack of wagon roads and railroads. The allies, seeing the importance of roads, have assigned large contingents of the armies in the Balkans and in France to road building.

GOOD ROADS AND THE GROWTH OF COMMUNITIES.

The need for good roads has not diminished as a result of the building of other means of transportation. On the contrary, as soon as any railroad or trolley line helps to develop a community the need for good roads is keenly felt, because the more people come together the more they become interdependent and the more they realize the necessity of lines of traffic and travel. A good road is at once the outcome of community life and a means of promoting new community activity. It is a result of the concentration of population and a promoter of further concentration and interdependence.

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Chapter VIII.

THE WORKER AND THE WAGE SYSTEM.

This chapter deals with the human element in industry—the workers, and problems which concern them as such. The first lesson relates to the part of women in industry. The preparation of food and manufacture of clothing and the materials for it have always been considered "women's work." When the factories took over the greater part of that work, women followed it into the factories. The number of women workers has grown steadily, and since the great war began the increase has been very rapid. They must be protected by carefully drawn State laws and by thorough official supervision of their places of employment.

The present war is a war of industries no less than of armies, and the importance of man-labor power has been emphasized as never before. Labor organizations have suddenly attained a status that they might not have reached within another generation if normal conditions had continued. Lesson B–29 shows the purposes and functions of labor unions and describes their structure.

The human resources of the Nation are often wasted in part because of the difficulty of placing every man who wants a job and of filling every job that needs a man. It frequently happens that men are idle in one community when jobs are vacant in another. Public employment agencies have been established by many States and by the Federal Government to bring the men and the jobs together systematically and effectively. Lesson B–30 describes this work.

"Employment management," substantially as described in Lesson B–31, has been practiced in some of the great industrial establishments for a number of years, but the war need of utilizing our labor power to the utmost has brought the plan conspicuously forward. It contains possibilities of great service in improving the lot of workmen and in increasing the output of individual industrial plants. It is, therefore, a matter of national importance, and appropriate governmental agencies are taking active steps to encourage its general adoption.

LESSON B–28. WOMEN IN INDUSTRY.

By Miss EDITH ABBOTT, *of the Chicago School of Civics and Philanthropy.*

There were employed in the factories and work shops of the United States 1,772,095 women and girls when the Federal census was taken in 1910. These are our "women in industry." But although they are collectively called "women," about one-third are under 20 years of age and more than one-half are under 25 years of age. That is, the great majority are girls and very young women. This is an important point for it shows in part the need of protective legislation for women workers.

WOMEN'S WORK IN THE HOME AND FACTORY.

Many people think it a strange thing that nearly two million women should be employed in great industrial establishments, but when their actual tasks are known, their employment does not

seem at all strange. Most of these women work in the great textile factories as spinners or weavers; in the factories that make clothing; and in the factories like the canneries and the packing houses where much of our food is prepared. The preparation of food and clothing has always been considered "women's work." Nowadays, it is largely done in the factory instead of in the home.

THE FIRST AMERICAN FACTORY "HANDS."

Our women began to go into factory work in the early part of the nineteenth century, when the factory system was introduced into this country. At that time there were no women doctors or lawyers or teachers or clerks in stores and offices. A woman who wished to be independent and self-supporting could find no work outside her home until suddenly, with the introduction of machinery, she found she could become a factory operative, making the things she had always made. Her labor was greatly needed in the new factories. Agriculture was then our great industry and it was not easy to get capital and labor to build and run new factories. Our first factory hands were therefore girls and women from well-to-do and educated families. Just what they did can be best described by the stories of two or three of these girls.

THE STORY OF HANNAH BORDEN.

In what is now the great textile city of Fall River, Mass., some of the new machinery for spinning and weaving was already at work as early as 1817. The best weaver in this new mill town was Hannah Borden, the daughter of a large stockholder in Fall River's

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1. Take the last census of occupations and enumerate the occupations in which no men were employed.

2. Enumerate those in which no women were employed.

3. Are there any kinds of work usually done by women that could not be as well done by men?

4. Make a list of any kinds of work usually done by men that you think could not be done by women.

5. There is a popular tradition or prejudice that certain kinds of work are "men's work" and certain other kinds of work are "women's work." Are any of the occupations that you have put in your lists in answers to questions 1 and 2 occupations that could be perfectly well done either by men or women if there were not a popular prejudice against it?

6. Make a list of things which in the colonial days were made in the home and are now made in the factory. Why are these things made in the factory? Is it because factory-made goods are of better quality? Is it because they are cheaper?

first cotton mill. Hannah Borden learned to weave on the hand loom when she was 8 years old, and at 14, when she went into the mill to work, she was an excellent weaver. After the power loom was introduced she ran two looms and wove 30 yards of cloth a day. She worked in a weaving room that was rough and unplastered and very cold, for there was only one stove to furnish heat. Part of the time she did "custom weaving," running only one loom, with extra care, and producing fine cloth.

Her day passed something like this: She arose at 4 in the morning and went to the mills taking her breakfast with her. By 5 o'clock she had her two looms at work, and by 7.30 she was ready to stop for breakfast. The breakfast time meant an hour off—from 7.30 to 8.30—but at noon she had only half an hour for lunch, and the looms were busy from that time until half past 7 at night. It was 8 o'clock before the Fall River mill girls of that day got home for supper, and they were said to be so weary that it was not uncommon for one of them to fall asleep over her evening meal.

THE STORY OF LUCY LARCOM.

During the first half of the nineteenth century New England was full of girls like Hannah Borden. When Dickens visited the young city of Lowell in 1842, he was amazed to find a "factory population" composed largely of educated young women who worked hard all day and spent their evenings writing poetry and attending lyceum lectures with such lecturers as Ralph Waldo Emerson and John Quincy Adams. These workers arranged for circulating libraries and even wrote and published a magazine called "The Lowell Offering."

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1. Do you think bread should be made in the home or bought from some company that makes thousands of loaves of bread every day? Is the bread maker usually a man or woman?

2. Do you think the family washing should be done in the home or done by a laundry company outside of the home? Does a man or a woman usually do the washing in a laundry?

3. Are there any modern occupations of women in the home that are likely to be factory occupations in the future?

4. What is a stockholder? What is a bondholder? What does a certificate of stock look like? What does a bond look like?

5. Would men prefer to be farmers rather than factory workers?

6. Why is it easier to get men to work in factories now than it was in the first half of the nineteenth century?

7. Why did the factory owner find it easier to get men employees in England than in America?

Among the famous contributors to this magazine was the gentle New England poet, Lucy Larcom, who began working in the Lowell mills when she was 11. With her sister, Emeline Larcom; her friend, Harriet Foley, later famous as a sculptor; and Harriet Hanson Robinson, who afterwards became a well-known Massachusetts suffrage leader, Lucy Larcom helped to make the Lowell factory town an interesting example of factory work and educational work going on together. Many of these girls were passionately eager for knowledge. They were saving money to go to Mount Holyoke Seminary or some other good New England academy that had been opened for women, and they were helping to send their brothers to Harvard College.

THE AMERICAN GIRLS LEAVE THE FACTORIES.

It is sometimes said that these splendid American girls left the mills when the immigrant girls began to come to the mill towns, first from Ireland and later from the French Canadian provinces. It is sometimes said that the American girls were "driven out" of the mills by the immigrants. But this is an error.

The Lucy Larcoms and Hannah Bordens were in the mills because the occupations requiring more education and intelligence were not open to women in those days. Gradually, as the common schools improved and more teachers were needed, these girls began to leave the mills to become teachers. At first they taught in the summer and then went back to work in the mills during the winter. Finally, during the Civil War when the mills were closed and when women were needed to take the places of men

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1. Read Lucy Larcom's poem "Hannah at the Window Binding Shoes" and write an account of the work of women in the shoe industry in Hannah's day and in Lynn and Brockton, Mass., at the present time.

2. What is a "pogrom?" How do you explain such a thing happening?

3. "Evening schools open 12 months in the year are needed in industrial communities." Why?

4. What has the evening school to do with the problems of "Americanization" and "assimilation"?

5. What are steerage tickets? Are many immigrants brought over through the help of friends and neighbors as happened in the case of Esther?

6. Find out into what parts of our country the French Canadians came. Why are they called French Canadians?

7. Find out what is meant by "sweated industries."

8. Do you think it is really true that women workers can not inspect the work places and make wise selections of places in which to work?

teachers who had enlisted in the great armies of the Union, the old heroic band of American student operatives was dispersed. Many of the girls went west to teach, and Lucy Larcom herself went out to what she called the "Looking Glass Prairie" of Illinois.

THE IMMIGRANT GIRL IN INDUSTRY.

What a contrast between the women employed in the first Lowell mills and the immigrant women in the great mill towns of to-day. Immigrant girls from Italian villages and from the other peasant districts of Europe have come into the great factories and into the already crowded tenements of the industrial cities. These young peasant girls are as eager and ambitious as were the New England girls of the earlier day, but many have come from countries where education is neither compulsory nor free. Although they are eager to learn to read and write, it is not often easy for them to go about it. Alone and bewildered in a strange city, not even knowing the language of the country, they can not always find their way to night schools. Furthermore, they are not always fortunate enough to work in cities where night schools are provided.

THE STORY OF ESTHER SIMANSKI.

Let us take, for example, the story of a girl from eastern Europe, whom we shall call Esther Simanski. Esther was a Jewish girl whose parents had been murdered in a Jewish "pogrom." She had fled to America with her sister and some other Jewish refugees from the terror-stricken city.

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1. What is meant by the prohibition of night work? Why is night work less desirable than day work?

2. An English commission decided that women could in many industries actually do more work in 8 hours a day than in 10 hours. How can this be possible? Is it true as a short-run proposition or as a long-run proposition?

3. "In industries where the machines are automatic, a greater output will be secured by working the hands 10 or even 12 hours a day. In industries where much depends upon the worker, an 8-hour day will get better results." Mention some industries of each class. Do you think the quotation states the matter correctly?

4. "Even if a great output can be secured by a 10-hour day, society should nevertheless insist on an 8-hour day." Give arguments on both sides.

5. How do you account for the fact that English laws protecting labor are more advanced than American laws?

She was too small to find work in a factory; so she sewed at home, finishing garments that her older sister brought home with her from the factory where she worked. The sister became ill and Esther took her place in the garment factory. She walked a long distance every morning and evening to save car fare, and she tried to work at home, sewing far into the night, to earn money to take care of herself and her sick sister and to pay back the neighbors who had paid for their steerage tickets. She wanted very much to go to school and learn "English reading and writing," but she was very tired when she got home in the evening and there was always washing, ironing, mending, and sewing to be done.

In an interesting book called "Making Both Ends Meet" many stories are told of the working girls of New York City, and a good many of these stories are the stories of Jewish girls like Esther. Sometimes these girls are wonderfully successful, working hard over their machines in the factories by day and going to school and working equally hard over their books at night, and eager to tell you what a wonderful country America is because it gives an education even to those who are very poor and friendless. But sometimes terrible misfortunes befall these hard-working ambitious girls. Perhaps you have heard, for example, of the great disaster known as the "Triangle fire" in New York City, where 145 employees, mostly women and girls, lost their lives.

THE STATE AND THE WORKING WOMAN.

These women workers can not inspect the places in which they work, and choose a work place that is safe and sanitary and protected from the danger of fire. They are usually in great need

1. Why do women get lower wages than men even when they do the same work?

2. The House of Representatives has passed a bill submitting a constitutional amendment giving women the right to vote. Do you think working women will be better off if this amendment becomes a part of the Constitution of the United States?

3. Does the short working day have anything to do with the problem of "Americanizing" the immigrant?

4. Explain why it is to the advantage of the State that high wages should be paid. Explain how the employer as well as the worker is benefited by high wages.

5. Some people say that the "labor standards" which appear in our "protective codes" are there because it has been found that they promote efficiency. What is meant by "labor standards"? Do you agree with the statement?

of work and they must take the "jobs" that are vacant, no matter how unsafe the building may be. It is the duty of the State to protect these workers who are so helpless that they can not protect themselves. For nearly three-quarters of a century the English Government has been trying to protect its working women and has been building up a great protective industrial code. England was called for a long time "the workshop of the world" because of the greatness of her manufacturing industries. And the "workshop of the world" fortunately has set a high standard in the matter of rules to protect the women and girls in its great industries. Some of the most important of these regulations of the conditions under which women work are the following: (1) Prohibition of night work; (2) the short working-day; (3) the minimum wage. No woman in England may work more than 10 hours in one day and no woman may be employed at night work. In certain industries the law sets a minimum wage which the employer must pay. This last protection is a very important one. Low wages mean poor and insufficient food; and underfed working girls lose their vitality and health.

WHAT ABOUT THE UNITED STATES?

England has passed these laws and other laws for the protection of her working women. What about the United States? Here in America we have 48 different States and each State has its own separate code of labor laws. Some States have short hours, some have abolished night work, some have passed minimum wage laws, and some have very good laws preventing danger from fire

1. What reasons can you give why the war will not cause the employment of women to increase as rapidly in the United States as it did in England?

2. The Chief of the Ordnance Department and the Quartermaster-General issued a pamphlet called "General Orders No. 13," in which they told manufacturers what would be proper standards for women's work. Just how does it help to win the war to issue such a pamphlet?

3. The Women's Trade Union League has issued a pamphlet telling what they regard as good standards for women's work. Why should they issue such a pamphlet?

4. In the Council of National Defense at Washington there is a Committee on Women in Industry, and the Department of Labor is setting up a division called by the same name. What do you think such committees and divisions could do that would help in winning the war?

5. People who have studied the matter say that one large cause of labor "unrest" in England, in the first year of the war, was the breaking down of labor standards. Do you think this could have been a cause?

and other accidents. But other States do not have such laws and some States that have good laws on their statute books do not have them enforced, and they are not very useful in protecting the women and girl workers.

WOMEN IN WAR WORK.

The great war has caused a rapid increase in the number of women working in our industries. In England, where great numbers of the men were called to the colors, the increase has been very rapid indeed. In July, 1914, there were 3,345,000 women in industrial pursuits, and by November, 1917, there were 4,761,000. In the United States it is not likely that the number will increase so rapidly, but already women may be seen doing a great deal of work which was formerly done by men.

Even in England there has been some trouble in making proper provision for protecting these women workers, and it will be a more serious problem in the United States, for our laws and administrative machinery are not so good as those of England on these matters. We must remember that, even from the narrow point of view of making war materials rapidly, it is necessary to protect the women workers. A commission reporting on this subject says: "It is recognized that better working conditions produce increased efficiency, the lessening of mortality and morbidity of workers, and greater economy in manufacturing and producing." It is not surprising that the Council of National Defense early in the war passed a resolution that existing labor standards ought to be maintained. The leading officials of our Government who are engaged in war work, such as the President and the Secretaries of War, Navy, and Labor, are heartily supporting this policy.

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LESSON B–29. LABOR ORGANIZATIONS.[1]

Everybody knows that a good machine ought to be used with care. It ought to be kept well oiled, sheltered from bad weather, run under conditions which will not strain it, and promptly repaired in case it breaks. It pays to run machines this way. It seems strange that not all employers have yet learned that it is wise to "run" their "human machines"—the workers—in this same considerate fashion. It pays. Workers have powers of responding to good treatment which machines do not. In addition to paying, it is the right way to deal with human beings.

THE STORY OF A GLOVE FACTORY.

In one of our western cities there was an owner and manager of a glove factory who had not learned that it paid to give his workers good treatment. The story is worth telling in some detail. To begin with, he left all matters of "hiring and firing," all questions of shop discipline, and many questions of rates of pay entirely in the hands of his foremen. These foremen had not been wisely selected. They treated the workers in an arbitrary fashion. They hired and promoted their own friends and relatives; fined or discharged on very trivial grounds people they did not like; and, in general, acted like petty despots in their little realms. It is fair to say that the manager did not know how his foremen were treating the workers, though of course he should have found out.

PACEMAKERS AND UNFAIR FINES.

Other unpleasant things happened of which the manager did know. Wages in that factory were on the piece basis, which means that the worker is paid so much for every piece he makes. At first, piece rates in this glove factory were high enough to enable workers to make good wages each day without undue strain. The manager, however, hired some fast workers from other factories and brought them in to "set the pace" for his own workers. These fast workers could turn out many pieces per day. On the basis of the number of pieces these "speeders" could make, the piece rates were lowered, and the workers were told that by exerting themselves and turning out a large number of pieces each day, they could still make living wages.

[1] The material for this paper was supplied by F. S. Deibler, professor of economics at Northwestern University. It shows, by a somewhat extreme case, some of the reasons why workers believe in unionism. It also sketches the broad outlines of the structure of labor organizations.

This did not seem to the workers fair. Few of them could make as many pieces as the "pace setters," and bad matters were made worse by an unreasonable system of fines for spoiled work and for tardiness. The workers did not object to fines in such cases, but they did object to unreasonable fines and to fines being imposed when they were not to blame.

It was the custom of the factory to charge the workers a small amount each week for the power necessary to run their machines and they were also charged for the needles they used. After a while they discovered that the manager charged so much for the power and for the needles that he made a profit on them. This was, of course, very irritating.

THE WORKERS SOUGHT A REMEDY.

It must not be supposed that the workers did not complain under this treatment. Person after person asked for higher wages, told of unjust treatment by the foremen, pointed out that the hours of work were excessive, and that the machinery was not properly safeguarded. The manager, however, had a false notion of "discipline" and promptly "fired" any worker who told him of these or other difficulties. The individual worker thus found out that he, acting by himself, was in no position to bargain with his employer. His employer could dispense with him much more easily and with much less loss than he, the worker, could dispense with the employer.

Matters finally reached the stage where the employees "walked out." This in itself showed how bad matters were, for these workers were not organized and did not "strike" at the suggestion

1. Have you ever seen any machines which were not properly cared for? What happened to them? Did the owner of the machine lose because of this poor care? Did society lose? Did the machine lose?

2. Have you ever seen a worker who was not properly cared for? Who was to blame? Did his employer lose because of this poor care? Did the worker lose? Did society lose?

3. Find out what day wages are; what a bonus is; what profit sharing is.

4. Do you know any foreman? If so, find out from him just what he does. Find out whether he thinks the foremen in this glove factory did right.

5. Ask some worker whether he ever had a foreman like those of the glove factory; whether he ever had any experience with pace setters; whether he has ever been fined. See if he thinks he was unjustly treated in any of these cases.

6. Do you think the workers had a right to be irritated when the manager made a profit from the needles? Why or why not?

of an "agitator." They had simply reached the point where they all felt that they could not work longer under such conditions. The final outcome was that a union was formed. Representatives of this union talked matters over with the employer, and he agreed to change his policies. The employees came back to work, and from this time on most of them were members of the union.

COLLECTIVE BARGAINING AND UNION BENEFITS.

The story of this glove factory is the story of an extreme case. Most plants are better managed. This extreme case is worth studying, however, for it shows why so many workers believe so firmly in their unions. They find that by organizing they are in a better position to bargain with the employer, and this means that they can secure better wages, better hours, and more favorable working conditions generally.

In addition to this so-called "collective bargaining" work of unions, most of them promote the welfare of their members in other ways, such as the payment of benefits when their members are sick, out of work, on strike, or disabled by old age. The amounts paid in benefits have been inadequate in many if not most cases, but the payment of these benefits has been very helpful and has developed a spirit of fraternity among working people.

APPRENTICESHIP RULES.

Most unions have apprenticeship rules. In some cases these rules have been adopted mainly for the purpose of training a boy entering an industry to become a skillful workman. It must be

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1. The manager of this glove factory once said that his workers were quite contented, for they made few complaints. Was the scarcity of complaints proof of contentment?

2. Draw up a definition of "collective bargaining." Find some one who has worked under an agreement of this kind. Ask him how often, if ever, the bargain is revised.

3. We hear of disputes between workers and employers. Are wages the only cause of such disputes? A prominent labor leader once said that wages were "not more than one-fifth of the story." What did he mean?

4. Some one has said that "the union is an impersonal device which the worker has developed to meet the impersonal conditions of modern industry." What does this mean?

5. What is meant by "standard of living"? What do you think of the argument of some unionists that limitation of apprentices is justifiable as a means of maintaining a high standard of living?

said, however, that some unions have drawn up apprenticeship rules with the main purpose of limiting the number of people entering that trade so as to be able to secure higher wages for those already in the trade. Such unions are not likely to be very friendly to vocational education in the public schools. They defend this policy by arguing that under modern machine methods it is not necessary for men to be very skillful and that the vital question now is how many workers an industry will support in accordance with the American standard of living. It seems to them fair to limit very c osely the number who may enter a given trade so that those already in the trade may get good wages and thus have good living conditions.

THE OPEN SHOP AND THE CLOSED SHOP.

All of us have heard of the "open shop" and the "closed shop." The unions are glad to have the closed shop arrangement, which means that the employer will hire no one but members of the union. Such an arrangement is not necessarily harmful either to the employer or to the public. If the union concerned is one which readily admits new persons to the trade, there may be no monopoly but merely a better control of workers by responsible union officials and more carefully made bargains on wages, hours, and other working conditions. If, however, the union concerned restricts greatly the number who may join it, a harmful situation may arise. Employers who oppose the closed shop are like y to insist upon the so-called "open shop," which is a shop in which both union workers and nonunion workers may be employed.

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1. Find out some unions which exist in your community. Are they craft unions or industrial unions or labor unions?

2. Name as many different "crafts" as you can in mining. What do you suppose is gained by having an industrial union in this case?

3. Find out when the Knights of Labor were flourishing. Did this organization enter politics?

4. Is the I. W. W. a labor organization? Does the American Federation of Labor approve of the I. W. W.?

5. Find out what is meant by "sabotage." How can anyone believe in such a thing?

6. What is the Woman's Trade-Union League? Is there good reason for such an organization?

7. Is there a "city central" in your city? If so, find out what kind of questions are discussed at its meetings. When are its meetings held?

8. Find out whether any national or international unions are represented in your community.

Sometimes, it must be admitted, open shops are open only in name. Some employers are able to close their shops entirely to union men. Such shops might perhaps better be called "closed nonunion" shops.

THE SETTLEMENT OF DISPUTES.

In those industries in which the employers have recognized the union, and the wage contract is the result of collective bargaining, there is usually definite provision for the settlement of disputes. These disputes may come up when the collective bargain is being made or they may arise afterwards. In either event they are likely to be settled by conciliation or by arbitration. Settlement by conciliation means that some "outside" person gets the representatives of the two sides together and they work out an agreement that is satisfactory to both parties. Settlement by arbitration means that the workers and the employer agree to accept the decision of an umpire. Each side then presents its case and the umpire makes his decision. If disputes can not be settled in either of these ways, the last resort is the "strike" or "lockout." A strike takes place when the workers collectively leave their work; a lockout when the employer discharges his employees. It then becomes a question which side can hold out longer. Both strikes and lockouts are very expensive methods of settling disputes.

The United States Department of Labor maintains a "conciliation service" whose function it is to try to bring about adjustments by conciliation whenever the department is asked to do so by the employer, by the worker, or by the public. This service has been, upon the whole, quite successful.

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1. Unionists sometimes get very angry at strike breakers. What are strike breakers? Why do unionists dislike them? What are "scabs"?

2. "We do not really have open shops and closed shops. We have two kinds of closed shops and the open shop." What does this mean?

3. Some people claim that unions do good work among our immigrant workers by educating them in American ways and habits of thinking. Do you think this is true?

4. What things do unions do which may be classed as "fighting activities"? How would you describe their other activities?

5. What reason can you think of why it might be wise to combine the locals of a given trade in a community?

6. Look at a copy of "The American Federationist" to see what it deals with. Who is president of the American Federation of Labor?

7. What are employers' associations? Are there any in your city?

THE STRUCTURE OF LABOR ORGANIZATIONS.

Labor organizations are not all alike. If the organization takes in only workmen employed in some single kind of work, such as that of carpenters, plumbers, or painters, it is known as a "craft" union. Some organizations admit everyone in a whole industry, regardless of the kind of work he does, and these organizations are called "industrial" unions. The United Mine Workers' Union is an illustration of an industrial union. Sometimes an organization takes in all kinds of workers, no matter what craft or industry they work in, and it is then called a "labor" union. The Knights of Labor, which was at one time a strong body, was an organization of this sort. Of course, the expression "labor union" is also used in the general sense of "labor organization."

If you were to talk to a member of a union, you might hear him speak of his "shop meeting." When several members of the same union work in the same factory or shop, they are likely to come together occasionally to talk over matters affecting them in that shop. You would almost certainly hear him talk of his "local." By this term he means the organization to which he belongs in his locality. It is likely to include workers from many shops. In most cases locals have what is known as a charter from "national" or "international" unions, and the things which a local union may or may not do are likely to be set forth in a constitution which has been approved by the national or international. Some international unions allow only one local in a town or city. For example, Local No. 6 of the International Typographical Union is the only local in New York City and has a membership

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1. Find out, if possible, from some laborer and from some employer what each thinks of unions.

2. If the opinions of the employer and the worker differ, try to find out from each the reasons for this difference.

3. Find out from union men in your neighborhood whether their unions pay "benefits." If they do, what ones?

4. Find out from some union men what apprenticeship rules his union has. See what he thinks about the statements made in this lesson concerning apprenticeship rules.

5. What are the railway brotherhoods?

6. What are "jurisdictional disputes"?

7. Do the schools in your city have any courses which aim to train boys and girls to be better workers when they enter industry?

8. German spies are spreading stories designated to get unions and employers to fighting each other. It is easy to see why. What can you do to help defeat these spies?

of 5,000 to 6,000. Most unions have several locals in the same town or city. If it becomes necessary to combine the locals of a given trade in a community, it is done by forming a "district council," which is made up of representatives of the locals in that vicinity.

National unions, city centrals, and the American federation unions first came into existence as locals. Workmen in a given trade or industry combined in a local to promote their welfare. Later, when locals in the same trade or industry had been formed in other localities, it seemed wise to unite them, and the national or international unions, such as the Brotherhood of Carpenters or the International Typographical Union, were developed for this purpose.

In a large number of cities the various unions send representatives to a central organization to discuss general labor matters of that city and to adopt satisfactory policies. Such an organizarion may be called by a variety of names, such as the federation of labor, the city central, the central labor union, or the allied trades and labor assembly. In like manner the State Federation of Labor is an organization of the unions within a State and deals with questions in which the union men and women of that State have a common interest, such as the passage of legislation affecting safety, sanitation, or hours of labor.

Finally, there is the American Federation of Labor, which is composed of representatives from the various national and international unions and from the State federations, the city centrals, and other bodies. The American Federation of Labor tries to promote the interests of laboring men and women throughout the whole country.

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1. Do you think there was any need of unions before the coming in of the factory system? Tell why you answer as you do.

2. Do you think there is any need of unions to-day? Tell why you answer as you do.

3. In what way could a national union aid in securing workers needed for war purposes?

4. "A few unions and a few employers are more anxious to fight each other than they are to fight Germany." Does this show that their prejudices are great? What can the great mass of sensible unionists and employers do with these misguided people?

5. Show why the leaders of unions are in a position which enables them to be of great service in winning the war.

6. Are any disputes going on now in your community? Does the newspaper tell of any in other communities?

VARYING JUDGMENTS ON UNIONS.

People differ very much in their opinion of labor organizations. Some think that these organizations serve no good purpose and are indeed dangerous. Others think that they are very helpful not only to the worker but to the community at large. The truth is that there are good unions and bad unions, good union policies and bad union policies. Like most other institutions, they are either good or bad according to the use which is made of them.

UNIONS AND THE WAR.

Unions have played a very important part in the war and are likely to play a still more important part as the war goes on. In England they are very strong and England has also very many organizations of employers. Shortly after the war broke out labor and capital in England reached agreements on how they would conduct themselves during the war, and the unions have helped the Government in England in many ways.

Neither unions nor employers' associations are as strong in the United States as they are in England, but here also both are helping the Government. Their representatives are trying to work out a "National Labor Program" which will correspond to the English agreement spoken of above. The American Federation of Labor and its national and international unions are doing a great deal to show our workers the justice of the war in which we are engaged, to secure workers needed for war purposes, and to persuade men to work efficiently in war industries. The belief is general that these organizations will contribute a great deal to our final victory. It is a war for democracy. Organized labor must and will play its part.

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LESSON B-30. EMPLOYMENT AGENCIES.[1]

When people have products to sell, they usually take them to a market—it may be a country store, a city market place, or a grain elevator—feeling sure that they will find there persons willing to buy either for their own use or for sale to others. When a man has his own labor to sell, he seldom finds so convenient a market for it. Too often he can find a market only by the tiresome and wasteful method of going from factory to factory, or store to store, or office to office, asking for work. Even in fairly prosperous times when workers are in demand the man without a job does not know which employer needs his particular kind of services. He loses much time in going from place to place where he hopes to find work. Even when employers advertise for help in the "Want ad" columns of the newspaper the worker is not saved a great deal of time, for there are usually many applicants for each job, and most workers apply only to find that the place has been filled or that they can not do the work desired. In bad times a man out of work may spend many days or even weeks before he finds the market in which he can sell his labor.

A TYPICAL EXPERIENCE.

A Chicago working girl wrote to one of the newspapers, describing her experience in trying to find work. Her experience is substantially that of many other persons seeking employment. She wrote:

For the past 10 days I have been going to the loop every day to look for work. I am there at 8 o'clock in the morning. I look for work until 11. From 11 to 12 is the lunch period in most big establishments, and it is useless to try to see anybody at that time. My lunch in a cafeteria gives me a rest of 15 or 20 minutes. Then I am back again on the sidewalk. It is a chase from building to building and a constant dodging of automobiles. The results have been zero.

This method of having numbers of men and women going from place to place looking for work is unsatisfactory to the employer also. The employer must sort out from a crowd of applicants the men who can do the kind of work he has to offer. Even then he can not be certain that the most satisfactory workers happened to be in the crowd which came to his factory gates. This waste of energy for both employer and worker has been a large cause of the

[1] This lesson was prepared by M. B. Hammond, professor of economics, Ohio State University. A Nation-wide system of labor exchanges, federating those of the National, State, and municipal governments will render valuable service to our workers and to our industries both in times of war and in times of peace.

establishment of employment offices which undertake to bring together the worker seeking a job and the employer seeking a worker.

THE PRIVATE EMPLOYMENT AGENCY.

Most of the employment offices in this country have been established by private persons and are run for profit. These offices charge workers who apply a "registration fee," usually one or two dollars, and agree to try to find work for them. If work is found and the position is a permanent one, another charge may be made in the form of a considerable percentage of the first month's pay.

Some of these private employment offices are run honestly and do good work. This is especially true of teachers' agencies and of those agencies which enroll the higher grade of commercial and technical workers, such as stenographers and engineers. In many instances, however, it is clear that private employment offices, run for profit, are guilty of great abuses. Since the profits come mainly from fees paid by those hunting work there is a strong temptation for the persons who run the office to pretend that they have good positions open so that the worker will register and pay his fee. He is then likely to discover that "a mistake" has been made and that the place is no longer open or, if still open, that he does not have the desired qualifications; or he may be told of a job at some distant point to which he can not afford to go.

CLEARING HOUSE ARRANGEMENTS ARE DESIRABLE.

Another difficulty with the private employment agency method is that these agencies do not work together; do not cooperate. In our largest cities, the number of such agencies runs into the hundreds or even to a thousand. A man out of work must visit many of these agencies and pay fees in each one before he can be sure that there is no work of the kind he wishes which can be obtained through any of these offices.

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1. Name some goods which are produced for sale in the community in which you live. Where is the market for these goods?

2. Are any goods sold by peddlers in your neighborhood? What disadvantages would there be if all goods were sold in this way?

3. John Jones runs a factory for making shoes. Is this factory a market for labor?

4. Find out what a produce exchange is; what a stock exchange is. Are these markets?

5. When laborers are out of work in your community, how do they obtain work? Do you know whether they lose much time in getting work?

What the man out of work needs is one place where all employers needing help have made their wants known—not many places at each of which he may apply in the hope of getting work. What the employer needs is one place to which men out of work will go—not many places at each of which he must apply for workers. A central office in our large cities with many branches in different parts of the city and with these branches in constant and close touch with each other is the desirable system. An employer or a worker applying at any branch office may have his needs telephoned to all the other offices and those needs will quickly be filled.

PUBLIC EMPLOYMENT OFFICES.

It is this need of a centralized labor market which will bring together in one system all the "jobless men" and "menless jobs" of that community, which has led to the establishment of public employment offices. These offices are run by the Government, local, State, or Federal. Their expenses are paid out of public funds. They charge no fees whatever either to employers or to workers. They are not run for profit and have no motive to deceive their applicants, whether those applicants be employers or workers.

THE ENGLISH EMPLOYMENT EXCHANGES.

Public employment offices have existed in European cities for many years, but only recently have such offices been united into a national system. In 1909 Great Britain created a National System of Labor Exchanges, now called Employment Exchanges which soon included about 400 offices scattered throughout the United Kingdom. These offices have worked together in the same general way that the city system described above would work. Both employers and workers found them satisfactory, and they have been of great use during the war in enabling workers to be

1. Sometimes one hears of "bread lines." What are they? Would a good system of employment exchanges entirely prevent bread lines?

2. Are there any private employment offices in the city in which you live? Do they charge fees for their services? If so, do they collect these fees from the worker or from the employer? Are additional charges made when an applicant gets a position?

3. Some employers complain that private employment agencies tempt workers away from employers in order that the agency may find a new job for the worker. Do you think it probable that this is true?

4. What disadvantages are there to the worker in the "Want ad" system? What disadvantages are there to the employer?

transferred quickly to munition plants and to other industries where the needs of war require prompt attention. Over 5,000 vacancies a day were filled by these offices in the United Kingdom toward the end of 1917. The English are so pleased with the plan that they are preparing to increase the number of offices to 2,000. This enlarged system will be efficient during the war and it will render very valuable service indeed during the period of reconstruction after the war.

PUBLIC EMPLOYMENT OFFICES IN THE UNITED STATES.

Public employment offices were first started in the United States in 1890 by the State of Ohio, which set up such offices in the five largest cities in the State. Other States and cities followed the example of Ohio. For many years these offices, while doing good work, did not give general satisfaction. People did not really understand how important such work was, and the legislatures did not appropriate enough money to do the work properly. Records were poorly kept and poorly trained people too frequently ran the offices.

In 1913–14 there were a great many unemployed in our large cities, and this caused us to realize how poorly organized our labor market was. It also drew attention to the success of the British system of labor exchanges. Many States and cities began to establish such offices and those which were already in existence were given more money to work with. The Department of Labor of the Federal Government saw the need of establishing them in various parts of the country and did so through its Immigration Service. All told, by the end of 1917 there were almost 200 such offices in the country, and they were doing a volume of work which compared favorably with that being done by the English exchanges. Meanwhile an Association of Public Employment Officials had been formed as a means of exchanging information on good methods and of developing interest in such work.

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1. Is it right to use public money to run employment agencies? Ought not either workers or employers pay the cost? Is it right to use public money to run schools? Why do we not run clothing stores with public money?

2. In what ways, if any, do public employment agencies benefit workers?

3. In what ways, if any, do they benefit employers?

4. In what ways, if any, do they benefit society in general?

5. Is it fair to private employment agencies to set up public agencies to compete with them in the same town?

PUBLIC EMPLOYMENT OFFICES AS A WAR MEASURE.

After the United States entered the world war the employment exchange movement of this country received a great impetus. Hundreds of thousands of men of military age had to be withdrawn from their usual work to engage in fighting. Hundreds of thousands of other men had to be moved from their former places of work to the districts where war materials were being made. Our Governments—Federal, State, and municipal—had to find some way to supply labor quickly where it was needed in order that a sufficient quantity of war materials could be made. They found the employment exchange system well adapted to their needs. Many municipalities and State Councils of Defense established or enlarged the State and local systems. The President, out of the "emergency fund" which Congress had provided him, gave the Secretary of Labor $825,000 to spend between January 1 and July 1, 1918, in improving the national system. Congress had already provided $250,000 for the same purpose.

FURNISHING LABOR FOR BUILDING A CANTONMENT.

Two illustrations will show how useful these public employment agencies have been. When the Government decided to establish a cantonment at Chillicothe, Ohio, known as Camp Sherman, and desired to hurry the construction of the huts and other necessary structures, the Quartermaster's Office of the War Department issued orders to all contractors at Camp Sherman to get all the extra laborers needed by them through the State-city public employment office at Chillicothe. This office is one of a chain of 22 public employment offices maintained jointly by the State of Ohio and the various cities in which they are located. All of them are in close cooperation with each other. Between June 29 and September 8, 1917, a period of a little over two months, these offices had furnished through the Chillicothe office 21,716

1. Is there a public employment office in the city in which you live? How many persons work there?

2. What classes of workers in your community make most use of the public employment offices? What classes of employers use them most?

3. In a public employment office in one of our large cities the manager has a row of desks arranged where employers may sit to interview men. Is this better for the worker than sending him out to the plant? Is it better for the employer?

4. Do most people in your community approve of the public employment office? If not, why not?

workmen to the contractors working at the cantonment. These represented not only unskilled laborers, but also skilled men from nearly all the building trades, especially carpenters, electrical workers, and plumbers. On one Saturday morning an order came to the Chillicothe office that 3,000 men would be needed at the cantonment on the following Monday. The office at once got into communication with the other public employment offices in the State, and by Monday morning it had 3,750 men of the qualifications desired, ready to go to Camp Sherman as soon as summoned.

FURNISHING LABOR FOR BUILDING SHIPS.

Another example of the method in which the public employment offices are helping the country in war times is the way in which they have responded to the call for shipbuilders. Because large numbers of ships are required for sending our soldiers to France and for sending thousands of tons of munitions and foodstuffs to our soldiers and our allies, and because there has been a steady destruction of ships by German submarines, the need for ships has become the most urgent of all our needs. For this reason our Government is, in many shipyards on both coasts, carrying on the production of ships with feverish activity and is attracting to the shipyards great numbers of laborers of many varieties of skill. Here, too, it has made use of the public employment offices. The employment offices have furnished thousands of these workers and they have enrolled over 250,000 more, who are to remain at their present jobs until they are needed at the shipyards. This enrollment is in charge of the Public Service Reserve division of the Employment Service of the Department of Labor.

The "Reserve" has State directors in every State and has enrollment agents in practically every county in the country, and

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1. Find out whether any people in your community have enrolled with the Public Service Reserve for shipbuilding.

2. Another branch of the United States Employment Service is the Boys' Working Reserve. Find out whether any of the boys you know have enrolled with the Boys' Working Reserve. What kind of work do they expect these boys to do?

3. "A good system of employment exchanges is very important as a means of waging war successfully." Do you think this is true?

4. Find out what the United States Civil Service Commission is. Is it an employment agency?

5. What is an arsenal? Find out what arsenal is nearest you. How do they get workers for these arsenals?

subenrollment agents in almost every community. In a few weeks its agents in Massachusetts enrolled over 27,000 skilled workers willing to engage in service in the Government shipyards. The records of all these men on reserve have been classified according to their trades, and arrangements have been made so that, when they are called on, care can be taken that too many are not taken from any one employer or locality. Thus, when it is necessary to take men from other industries in order to meet the needs of the shipyards, this can be done in a way which will mean the least possible harm.

THE UNITED STATES EMPLOYMENT SERVICE.

It has become so clear that the public employment offices are a great help in securing the full use of the labor force of the country not only in war times but in the years after the war, when the men now in the armies will have to find their way back to various fields of work, that the Department of Labor of the Federal Government is making plans for a permanent employment service.

On January 6, 1918, the employment offices which had theretofore been conducted under the Immigration Bureau of the Department of Labor were reorganized under a new bureau called the United States Employment Service. Since then about 225 offices have been opened in the larger cities throughout the United States. There is at least one office in every State in the Union.

The purpose is to create under central control a system of public employment offices throughout the United States. In States where such employment offices are already maintained by States and cities, cooperative arrangements are made so that the local offices can work as part of a national system. Other States are encouraged to work with the Federal Government in opening offices wherever they can be of value. In each State the work is put under the direction of a Federal State director and an asso-

1. Do you think there will be any real need of employment agencies in time of peace?

2. At what times of the year are there the greatest demands for labor on the farm? What becomes of these farm laborers when they are no longer needed on the farm?

3. In what ways could a nation-wide system of employment offices assist in this movement of laborers to and from the farms?

4. Make as long a list as you can of the different ways in which you could go about finding a job.

5. Make as long a list as you can of the different ways in which an employer could go about finding workers.

ciate State director, the associate director representing and being in control of the interests of the State. The country has been divided into 13 districts, each in charge of a district superintendent.

Whenever more men are needed in a locality than the local Employment Service office can supply, it promptly appeals to the State director for assistance from other offices in the State. If these can not meet the needs, the State director appeals to the district superintendent, who asks assistance from other States in his district, and if these are unable to get the men needed, other districts are called on. Similarly if there are more men unemployed in any community than can be placed in employment by the local office, these men can be made available anywhere in the State or country. Arrangements are made to transport men promptly. A "revolving transportation fund" of $250,000 has been provided from which advances can be made by the Department of Labor to provide such transportation, and to collect it back either from the employer or the employee as may be arranged. In this way all the labor supply of the country can be promptly distributed to the points where it is needed most.

Immediate use will be made of this system, not only in supplying the employers who are working on Government contracts, but in meeting the needs for farm labor. The United States Employment Service is working under an agreement with the Department of Agriculture, which has a county agent appointed under an agreement with the respective States in each county in the country. The county agents keep in touch with the needs of the farmers, and call on the Employment Service to help supply the men. All third and fourth class postmasters have been made special agents of the United States Employment Service. The result will be that every man willing to work on the farms can be promptly put to work where he is most needed.

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LESSON B–31. EMPLOYMENT MANAGEMENT.[1]

Many times in these Lessons in Community and National Life we have seen that the position of the worker in the modern factory system is very different from the position he held in earlier stages of society. In some ways his position is not entirely satisfactory either to himself or to society. The preceding lessons on labor organizations and employment exchanges have shown us two out of the many ways in which efforts have been made to improve the position of our wage workers, and to make wise use of the labor power of the country. Workers join together in unions to gain higher wages, shorter hours, and better working conditions. Cities, States, and the Federal Government operate employment exchanges so that the workers may be directed to places where they can secure work and our factories can get readily the men they need to make ships and shells and Army blankets and the wares of peace.

Still another movement for improving working conditions and promoting the wise use of the labor power of the country comes from the industrial plants themselves and is led by progressive business managers. This movement is called "employment management."

THE NEED OF EMPLOYMENT MANAGEMENT.

Our modern factory system which brings together great numbers of men is after all quite new, and not many of us have yet learned how these large masses of men should be handled. In getting men for the jobs, it is usual to let the foreman "hire" at the factory gates and "fire" almost at will. Most of our plants have not even worked out good methods and just rates of wage payment. These also have too frequently been left to the judgment of the foremen. Often there is no definite policy of promoting men. It is not surprising that men working in such factories should feel that they are mere cogs in a machine and become careless and indifferent. Employment management is designed to improve such conditions.

THE WORKER AND THE EMPLOYMENT DEPARTMENT.

In one of our eastern industrial communities there lives a Mr. Seaton, a skilled mechanic who worked for years in a plant of the

[1] This lesson was prepared by Miss Ruth Reticker, of the School of Commerce and Administration of the University of Chicago. Employment management contains possibilities of great service to both workers and employers. For the nation it contains the possibility of providing, in individual industrial plants, the local machinery which would enable us to carry out effectively a national labor policy.

kind just described. One day he hears that the Summit Manufacturing Co., let us call it, has a different way of treating its men. What he hears sounds so attractive that he applies for work.

He goes to an office which has a sign "Employment department" on the door. First of all he writes down on a blank form the important facts about his home and his family, his training, his former positions and employers, and his personal habits. He is then interviewed by an employment clerk, who questions him about the work he wants and his attitude toward work, and explains the ideals and rules of the shop. The clerk describes the positions which are to be filled, what they pay, and what they will lead to. Meanwhile, he is deciding whether this man can do the work of a certain position soon to be created, and whether he is honest, industrious, and alert—in short, whether he will be a desirable workman. Perhaps he checks up his own impression by writing or telephoning to one of Mr. Seaton's previous employers. He concludes that he will offer him the position.

When the position is ready, Mr. Seaton is asked to report to the company physician. The doctor examines him to make certain that he is physically able to do the work, and that he will not bring into the shop any contagious diseases which would harm other workers.

THE WORKER IS INTRODUCED TO HIS WORK.

Mr. Seaton is hired. The employment clerk assigns him a locker and takes him through the plant, pointing out particularly the lunchroom, the showers, the men's club, and the night school, which are part of the company's plan to make its employees glad to work there. Then he gives him a printed booklet of

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1. Make a list of the ways in which the position of the worker in the modern factory system differs from the worker's position in earlier stages of society.

2. What is a foreman? Does he train men? Does he fix their rates of pay? Does he hire men? Does he inspect the quality of the work? Does he determine how the work should be done? Is it likely that one man would be wise enough to do all these things well?

3. Assume that you are about to start working in a factory. Make a list of the qualities which would make the position seem desirable to you.

4. Suppose your great grandfather was a manufacturer of cloth or shoes. Would he have needed an employment department to select his helpers? What is it about our present-day organization of cloth making and shoemaking which makes employment departments and employment management necessary?

information for employees and introduces him to the foreman and to the other workers in that division of the shop. He also explains the company's system of instruction cards which are given the workmen with each task, and the methods used to keep the machinery and tools in order. Already Mr. Seaton feels more "at home" than he has ever felt in his former jobs.

Since Mr. Seaton has had good experience in operating a machine similar to the one to which he is assigned, it is decided that he can begin work without any period of training. For a machine on which he was not experienced, Mr. Seaton would have received special instruction from a special teacher. For some positions in the shop he would have joined a special training class.

THE EMPLOYMENT DEPARTMENT COOPERATES WITH THE WORKER.

Mr. Seaton goes to work. The employment department puts him on the pay roll. In some concerns that would be the last he would see of the employment department, for some employment departments are employing departments and nothing more. The Summit Manufacturing Co. realizes that it will do little good to select superior workmen if they do not keep in touch with them after they are hired.

First of all, the employment department watches to see if the newcomer is really fitted for the position to which he has been assigned. His foreman keeps records of the quantity and quality of his output, and reports to the employment department his impression of the new man's attitude. If the new workman does not come up to the standard set, the employment clerk will talk with him to find the difficulty. Perhaps he needs a little special training. Perhaps he has not caught the spirit of the place. Perhaps he should be transferred to another department where the work would be more to his liking.

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1. The lesson tells of a system of instruction cards used by the Summit Manufacturing Co. What are instruction cards?

2. Employment departments keep various records concerning the workmen. Is the keeping of such records fair to the workmen?

3. Is it fair to the workman to have physical examinations? Might not a general system of physical examinations result in making it difficult for some worker to find a position?

4. Find out what an apprentice is. Do we have apprentices to-day? In what trades?

5. What is a corporation school? What is vocational education? A continuation school?

6. What is psychology? Can psychology help in the selection of workmen?

It happens that the records show that our Mr. Seaton is doing well in his position. The employment department continues to watch his record, for it is the basis of wage increases and of promotion to better positions.

EMPLOYMENT MANAGEMENT INVOLVES GOOD WORKING CONDITIONS.

The employment department policy touches Mr. Seaton in many other ways. Safety devices are provided to protect him against the rapidly moving belts and shafts. If he is injured, in spite of these precautions, or if he falls ill, first-aid medical care is provided at the factory, and the factory physician and nurse follow him to his home. If he can not work for a time, "workmen's compensation" in case of accident, or health insurance in case of sickness, is paid him. If he has a grievance against his foreman or a fellow worker, or is dissatisfied with a rule or a tool, a shop committee on which the workers are represented will hear his complaint and adjust it fairly. All of these are part of an enlightened labor policy which is now carried out by our more progressive factories and stores. Whether or not they are carried out under the direction of the employment department, or by a medical department, or by so-called welfare departments, they are all involved in employment management. For employment management means the development and wise utilization of the human resources of the plant.

EMPLOYMENT MANAGEMENT IS PROFITABLE FOR THE EMPLOYER.

It is no secret that the Summit Manufacturing Plant and other plants follow this policy of employment management because it pays. Progressive business managers have come to see that if

1. The lesson speaks of an "enlightened labor policy." What does this mean?

2. It is argued that providing medical care or other welfare measures for employees is selfish because it redounds directly or indirectly to the benefit of the employer. Do you believe this is true? If so, is it unfortunate?

3. What is meant by calling the employer's concern in the health, housing, recreation, etc., of his workmen "paternalism?" Does that mean that it is undesirable?

4. Why should the business manager be concerned with the kind of houses his workmen live in? With the way they spend their hours outside of the factory?

5. What do you understand by welfare work? What welfare work is done among the employees of factories in your community?

workmen do jobs for which they have not the strength or the eyesight or the training, if proper light and ventilation are not provided, if hours and wages are not satisfactory, if foremen are not considerate of the men under them, the workmen will leave and go to other positions, or will do such poor work that they have to be discharged.

The changing of the personnel of the working force is called the "turnover" of labor. Within the past few years many employers, individually and in the National Association of Corporation Schools and in Associations of Employment Managers, have been studying the labor turnover. They have found that changes of the labor force are very costly because of goods and machinery spoiled by inexperienced workmen, and because of interruptions to the other workmen. Some concerns have found that it costs them $50 or even more to break in a new workman. It would be cheaper to hold and develop one of the workmen already employed. Of course, some new men must be hired in every business, for such reasons as that men die or are unavoidably ill, or leave town. The main part of the working force can be kept unchanged, however, if a concern adopts a policy of making the plant a desirable place to work.

THE EMPLOYEE AND THE COMMUNITY ARE BENEFITED.

This policy of employment management is obviously beneficial to the workers also. In fact, employment management is often mentioned as illustrating the fact that the interests of the employers and of the workers are identical. If we refer to the story of the Summit Manufacturing Co., we may see an example of this. It is profitable for the company to fill the factory with

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1. To break in a new machine worker in a factory costs on the average $50, but to break in a new motor man or conductor on a street car cost $200 to $400. Can you give any reasons why the street railway employee should cost so much? Who pays this cost of breaking in new employees?

2. Make a list of occupations in which you think it would cost relatively little to break in a new man. Make a list of occupations in which it would cost much.

3. Find out what accounting is; what cost accounting is. Can you see any ways in which the accountant cooperates with the employment manager?

4. Make a list of the reasons why men leave jobs. Make another list of the conditions which you think would reduce changes of the working force.

superior workmen like Mr. Seaton, and to furnish these workmen with the best machines and tools, train them in the best methods of using them, and provide working conditions and a scale of wages which will keep the men well, contented, and efficient. The large output the men make saves the company money it would otherwise have to spend for more space, more machinery, more workmen, and more overseers. At the same time, the higher-wage Seaton and his fellow workers earn, the plans for regular promotion, and the provisions for welfare in general, are benefits to the workers.

Employment management benefits the community also. When workers are healthy, contented, and efficient, they make a large quantity of the things which the community uses, and everyone lives better. Employment management not only tends to produce such workers, but it also tends to bring about good standards in the laws of the community with respect to workers. States and cities show that they are concerned for the welfare of the workers by passing such laws as those requiring fireproof factory buildings, safeguards for machinery, compensation for injuries, and reasonable hours of labor. State factory inspectors enforce these laws. Business houses which have employment management departments commonly provide for their workers all the safeguards that the law requires and more. Frequently they try experiments to secure better conditions. If their experiments work well laws are likely to be passed which will bring all business houses of that State up to the standards of these leaders.

THE GOVERNMENT IS PROMOTING EMPLOYMENT MANAGEMENT.

The great war in which we are engaged has emphasized the need of employment management. War has taken thousands of men

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1. Make a list of the products which you think our factories could stop making in war times. Make another list of the things which we must have in greater quantities than before. In which list would you put typewriters, spectacle frames, furniture, office furniture, victrolas, pleasure automobiles?

2. Explain why it benefits the management, the worker and society for each man to do the work for which he is best fitted.

3. What is the legal working day in your State? The legal working week? Is it the same for men as for women? Why should there be a difference?

4. What is a minimum wage? Does your State have any minimum wage laws? What is the reason for minimum wage laws?

5. Is there an association of employment managers in your city?

and will take more thousands from our factories and mines and railroads to drill in our Army camps and to go overseas for service. Meanwhile, these factories and mines and railroads must be kept going. Ships and guns and shells must be made in quantities unheard of before, and the supply of many things for home use, such as clothing, farm implements, and food, must be kept up. It is therefore important that the men and women left in industry should work under conditions where a large output of goods will result. Every workman should, as far as possible, be in the work for which he is best fitted and should have proper working conditions. The Government is promoting employment management as one means of selecting and training workers, safeguarding conditions, and preventing unnecessary labor turnover. It is highly important that this work be done, for workers are moving from position to position at such a rate that labor turnovers of 1,600 or even 2,000 per cent are not unusual, although in normal times the average turnover is about 100 per cent.

The Ordnance Department, whose duty it is to supply for our Army guns, ammunition, saddles, cooking utensils, etc.; the Shipping Board, whose duty it is to build ships to carry our soldiers and our war materials to France; the Navy Department, which must build and operate our Navy, and other so-called production departments of Government are using employment managers more and more. When they hear of a plant engaged in making war materials which had bad working conditions, or a heavy turnover, they send an employment manager to that plant to give advice and to aid in installing a better system. Unfortunately, there is not a large number of men in the country who are competent to act as

1. Are the working conditions in your community better or worse than they were a year ago when war was declared? Are they better or worse than they were 10 years ago? See if you can find the reasons for the conditions which exist.

2. What are the advantages to business managers of night work? What are the disadvantages to the workers? Are they disadvantages which affect society in general?

3. Mention all the things you can think of that a considerate management should provide for employees who work at night.

4. Is it "paternalism" for the Government to promote employment management? Have we always thought it the function of our Government to make such provisions for our industrial activity?

5. Can you think of any ways in which this attention to employment management will be useful after the war? Will there be need of employment management when the soldiers return to the factories?

employment managers. The Storage Committee of the Council of National Defense has accordingly made arrangements with several of our colleges for special courses to be given to train men to take charge of this work. These men will be in great demand both by the Government and by private businesses.

EMPLOYMENT MANAGEMENT AND THE DEPARTMENT OF LABOR.

It is expected that this work of training and supplying employment managers will finally be taken over by the Department of Labor, which will work with our business plants all over the country to prevent waste of our labor resources.

The Department of Labor can help a great deal in winning the war by such a service. An office can be organized in Washington to collect information concerning the best methods used by any plant either in this country or abroad, and this information can then be given to other business houses. Bulletins can be printed which will show how costly the lack of employment management and high labor turnover are to businesses and how wasteful they are of our national labor power. Other bulletins can show how these costs and wastes can be remedied. Still other bulletins can describe successful methods of selecting workers, conducting physical examinations, and providing training classes for new workers. Traveling agents from the Department of Labor can carry to business men advice concerning their problems and can assist them in installing the plans proposed. This would be a great cooperative circle, for the Government would be helping the industries of the Nation to help themselves, and thus help the Government.

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